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THE DENTAL REVIEW.

DEVOTED TO THE ADVANCEMENT OF DENTAL SCIENCE.

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THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

OBLIQUE ROOTED MOLAR TEETH.*

BY WILLIAM BOOTH PEARSOLL, F. R. C. S., DUBLIN, IRELAND.

These teeth are worthy of study, not only from their comparative rarity, but as adding another complication to the numerous difficulties to be met with in the extraction of teeth. I do not think any one possessed of a few years' experience as an operator will ever forget the unpleasant sensation conveyed to his hand when trying to grasp one of these teeth, before dislocating and removing it from its socket. The usual molar forceps, instead of fitting the neck of the tooth and affording the needful leverage to complete the operation, revolves around the tooth as the blades are cautiously closed. If you replace the forceps and again cautiously close them you will find that the blades have grasped the antero-posterior diameter of the tooth, this sliding movement of the forceps on the neck of the tooth producing the impression that the tooth has become too small to be grasped, and the sensation conveyed to the hand of the operator is that the tooth has revolved in the socket yet cannot be removed from the jaw. The first example that came under my notice was in 1866. A gentleman came to me in very great pain one October afternoon, and begged me to extract a tooth that had just been broken by another practitioner, who had informed him "that the devil himself could not get it out." The patient was a very observant and intelligent man, and was good enough to tell me that he noticed, before the crown smashed, that as the blades of the forceps closed

*Read before the Chicago Dental Society.

the instrument slipped around the tooth. This happened a couple of times before the crown was crushed, and made him determine to consult another dentist if the operation was a failure.

I need not say I examined the tooth minutely after such a statement, and I found the palatine portion of the crown broken. The gum was torn and bruised. The broken tooth still appearing to offer sufficient support for the careful use of the forceps, I cautiously tried to feel my way in securely grasping the roots with the forceps, but the slipping or rotation was so marked I desisted and examined the tooth again. Finding that there was an unusual change of form, I determined to use the elevator. Even with this powerful instrument the resistance was considerable. Much to my relief and greatly to the delight of my patient, the broken tooth was dislodged without much further difficulty.

The next case came under my notice some three or four years afterward, with the crown crushed off the roots. I removed the roots by means of the elevator. This patient also came from a competent and experienced operator, who said "All the art of man would not extract that tooth." I will not occupy your time by detailing particulars of other cases I have met with in public and private practice. It is sufficient to say that it is my opinion that deliberation ought always to characterize our proceedings in the preliminary examination of an offending tooth, in cases necessary for extraction, as well as during the progress of the operation. You have only to look at the few specimens I have brought here to-night to see that it required something more than a mere turn of the wrist to conquer the resistance in all these difficult cases. In several of them the crown is badly fractured, and some have part of the external plate of the alveolus still attached, just as much as would be caught by the buccal blade of a forceps pushed well up, probably inside the gum, in the effort to remove the tooth regardless of the increased risk of injury to the surrounding parts.

This type of abnormality in position and shape of the roots is, so far as my experience and observation extends, not infrequent in maxillary wisdom teeth, but is rare in the first and second upper molars. A careful examination of the large number of specimens I have collected, some five hundred in all, shows a distinct divergence in form from the normal type of molar. In this type of tooth the roots have been subjected to some flattening process. If we

formulate the normal type of molar when cut across a little above the bifurcation of the root so as to cut each root separately, the diagram will show at a glance the change in form and direction that has taken place in the abnormal type of tooth. The normal type may be enclosed by an isosceles triangle, the abnormal three-rooted



Fig 1



Fig 2

NORMAL. ABNORMAL.

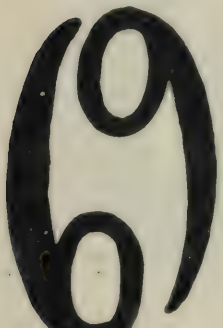


Fig 3

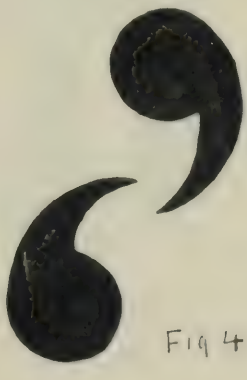


Fig 4

oblique type by a scalene triangle. The mesio-buccal roots, are, as a rule, larger in bulk and more in advance in external position of the disto-buccal roots in the diameter of the crown, drawn by a line in the direction from cheek to palate. You will further observe

that the crowns of this abnormal type do not present any marked departure from the normal.

The palatine root does not spring out from the crown with the bold curve we so often see, but is usually upright and parallel with the other roots, and it is squarer in form than in the normal type, with a shallow groove or depression running along its external surface in many specimens. So far as my study of this

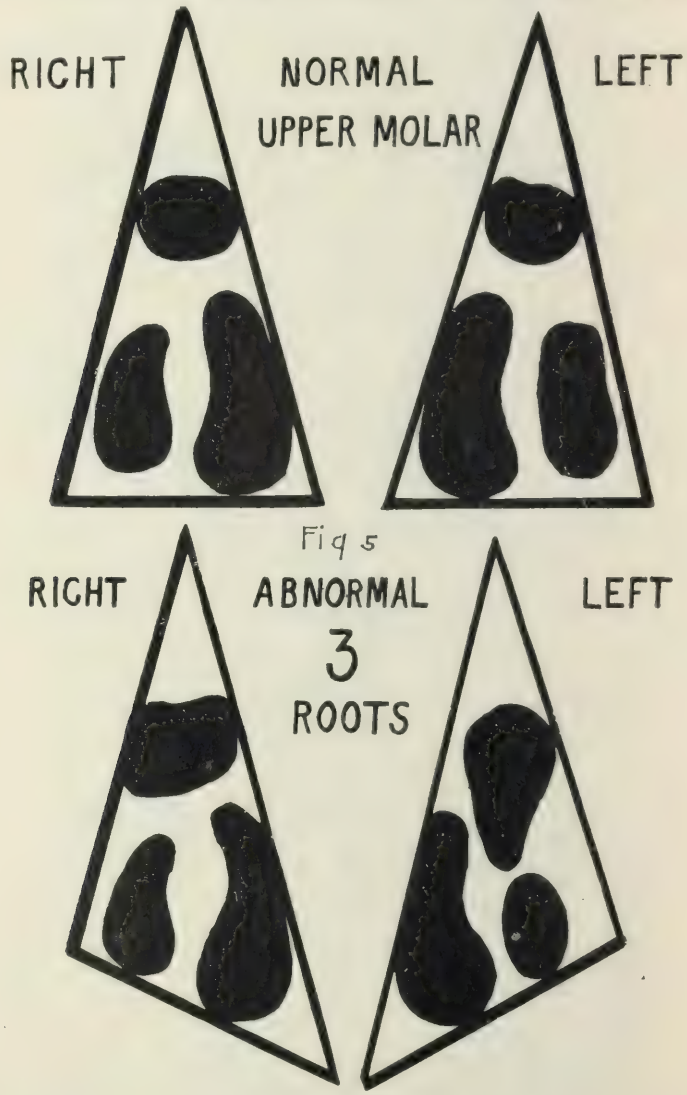


Fig 5

abnormality has been carried by the careful examination of over 500 specimens, this type of tooth may be divided into two classes or groups; one class shows the posterior buccal root fusing with the palatine root, forming a molar with two roots. If we study sections of these roots made just above their bifurcation, it will suggest the use of a diagram resembling the sign of the ♋

zodiac, commonly known as cancer, and representing the month of June, or two commas placed thus ,'. The other class or group has three distinct roots, like the normal molar, but so much flattened as to be enclosed in a scalene triangle on section as contrasted with an isosceles triangle which encloses the normal type.

It seems to me that teeth with an abnormality like these speci-

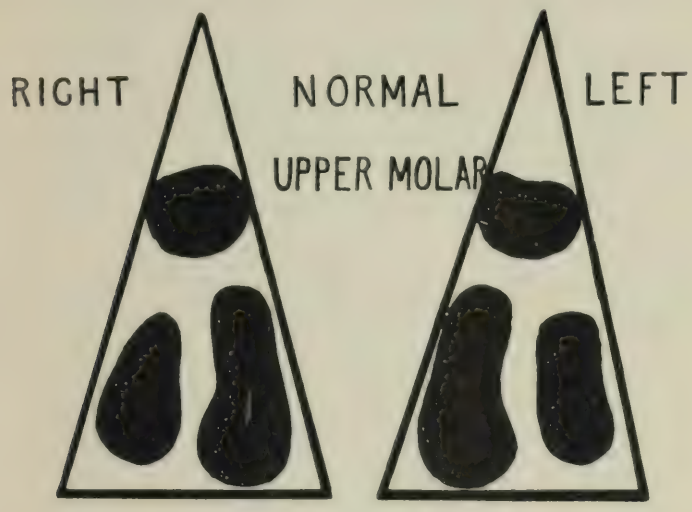
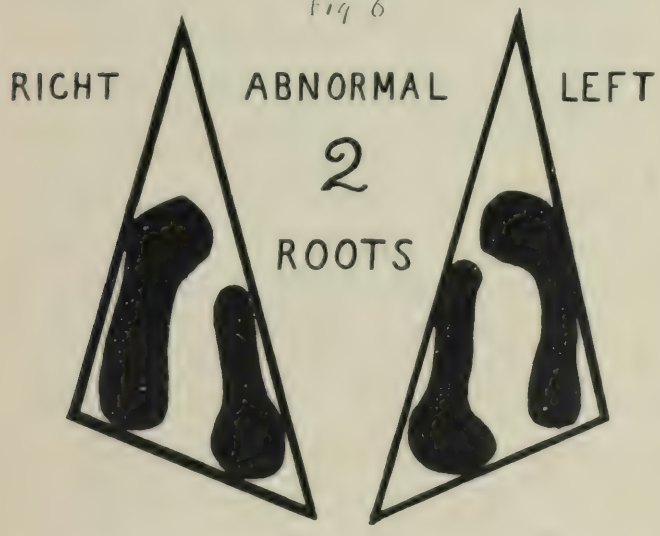


Fig 6



mens, may be named with propriety *oblique rooted*, as correctly expressing the nature of the variation from the normal type, whether they be two or three rooted, in so far as the dental operator is concerned, and afford some guide, at the same time, whereby these extractions may be successfully carried out. A large upper bicuspid forceps with one blade placed on the anterior buccal root and the other on the palatine root, gives a very firm

purchase; but care should be taken to see that the crown of the tooth is not touched by the forceps, but that the grasp is at the neck of the tooth. The elevator is, however, the most useful instrument in skillful hands, as these teeth can be cautiously pried out of their sockets without undue expenditure of force or risk to the surrounding parts. So far as I can find by personal inquiry and research in dental literature, I am the first to describe this type of abnormality as adding another difficulty to the familiar operation of extraction of teeth. I brought together at the Dublin meeting of the British Dental Association in 1888, 858 specimens of abnormal teeth in the museum formed for the meeting in Trinity College. Much time and skill was spent in examining, classifying and cataloguing them.

My colleagues adopted a high standard in selecting specimens, and we excluded all specimens that did not possess some well marked characteristic. Ordinary or normal specimens were not placed in the collection. By means of this careful method of selection, oblique rooted teeth were found to be represented by twelve specimens, only five coming from England and seven from Dublin, the latter example being contributed by Mr. G. M. P. Murray (one) and myself (six). Since 1888 my collection has grown in number, and I have now some 500 specimens, all of which caused some anxiety and trouble to the gentlemen who extracted them. I have not been able to secure impressions of the upper jaws of the patients from whom these abnormal teeth have been extracted save in one instance; but the gentlemen who have so kindly contributed this collection of specimens all agree that the dental arch was of the normal, well developed type, with strong, well marked teeth. I have obtained four of my own specimens from the mouths of English-born patients. I have, however, an impression taken from the jaw of a female that afforded one of these specimens among teeth I extracted from her a few years ago, in which I have placed the tooth in situ. The shape of the crown will not give you much information as to the obliquity of the roots, as it is perfectly normal.

In the second edition of Tomes' System of Dental Surgery, on p. 222, fig. 108 seems to me to be intended for one of these teeth, and it is also figured on p. 122, fig. 65, of the third edition. I have never seen the specimen from which the figure was drawn, and so I am unable to speak with exactness as to its being of the oblique type. In this accurate work you will read :

"Among the molar teeth, the first permanent molars will be found to be the most constant and the third the least constant in the number, shape and position of their roots. Three may be regarded as the typical number of the roots of the upper molar and two as that of the lower molar teeth. Now, although we find occasional exceptions to these rules in the first permanent molars, they are very unusual. In the two teeth from the upper jaw which are figured, the three roots are, by the confluence of two, reduced to two in number."

This quotation from the work of Sir John Tomes and his gifted son is sufficient to show how few dental abnormalities escaped their attention when Tomes' System of Dental Surgery was written.

I now wish to draw your attention to an observation I have been able to confirm by the examination of a very large number of teeth which came into my hands some years ago. This abnormality is also to be found among deciduous teeth, especially the two rooted maxillary type. I have not been observant enough in the past to take notes of cases that have passed through my hands and determine whether the permanent teeth were developed possessing the same abnormality. We do know that some peculiarities observed in deciduous teeth are simulated or reproduced when the permanent teeth appear.

For instance, we know that the ideal dentition of man is one possessing six incisors in each jaw.

Some months ago casts came to me from a friend in England, one showing six incisors in the deciduous mandibulous dentition of a child of about six years of age, and the other showing six incisors in the permanent dentition of the same patient at, I think, eighteen or twenty years of age.

This repetition of form is a subject open to accurate observation, and I simply mention these casts as an instance of what we might expect to occur. The main purpose of this paper is to show that the stability of form and position of roots of the maxillary sixth year molar is subject to the remarkable variation I have shown you to-night. I have not studied comparative anatomy sufficiently to be able to place before you the homologies that relate to such variations in form. It is a subject that opens up a most interesting field to those who are skilled enough in scientific observation to pursue it.

Ethics Applied to Dentistry.—Ethics, the Science of Duty.*

By M. R. Harned, D. D. S., Rockford, Ill.

When I offered to write upon this subject I had no idea of what I was getting into, for when I launch into the "science of duty" I find myself surrounded by a great sea of phases of duty: Duty to self; duty to home and family; duty to community; duty to profession; duty to State and country; duty to God. In fact, it is the warp of our social fabric; and in its relations to society is as high as God, as deep as thought and as broad as the possibilities of our highest social and economic life.

Duty is that strong arm which guides where conscience dictates. It is that co-relation between men which might be likened to a blood of common circulation, to some giving life and strength because properly aërated, to others dealing disease and death because not allowed to do its proper work. We feel the pulsation of it in the past through the noble and heroic deeds of our ancestors; through the toils and hardships of our fathers; through the sorrows and sacrifices of our mothers; through blood shed for humanity by our brothers; and the help and sympathy of our sisters. All who feel and recognize these pulsations are helped and strengthened; all who shun are belittled and weakened.

And yet this sustaining force of society arose in the most natural possible manner. Primitive man found that certain localities were better adapted to gaining a livelihood than others; this brought them together into communities, and they found it to their advantage (as a rule) to live in community; but to live in community necessitated rules of conduct, else the weakest would be robbed by the strongest and they in turn by those still stronger, and then the strongest would get all the good things; so the weaker, who are in the majority, make a rule "not to rob, and he who does rob will be punished." Each is giving up the privilege of robbing for the sake of protecting himself. They form a combination to prevent the strongest from taking advantage of them.

Thus arose the laws protecting life; thus arose the laws protecting property; thus began the laws that are in process of evolution respecting morals, ideas, conduct and religion; all of them are but approximates, the perfection of which is not even bounded by our ideals, for in our highest aspirations we are limited by our environments, and when one sets himself up as an authority, beware of his promise.

---

* Read before the Northern Illinois Dental Society.

You have doubtless heard the story of the argument between the two Rabbis. Rabbi Eliezer, being worsted in the argument, cried out, "If I am right, let Heaven proclaim in my favor." A voice from the skies was heard saying "Do you venture to dispute with Rabbi Eliezer, who is an authority on all religious questions?" But Rabbi Joshua rose and said, "Our law is not in Heaven, but in the book which dates from Sinai, and which teaches us that in matters of discussion the majority make the laws."

William Kingdon Clifford says, "The first principle of national ethics is the sole and supreme allegiance of conscience to community."

So whatever we term dental ethics must first of all subserve the welfare of the community, or we are not following along the line of true ethics. This, however, I believe we are doing in our simple code we have formulated for us. It means broader and more generous fraternal feelings, which in its turn broadens our manhood. It means greater charity for our patients and other dentists' patients. It means greater knowledge for the benefit of our patients. It means higher manhood and greater charity for the shortcomings of all, and a special charity in judgment of other dentists' professional services. It means that we cannot build up a desirable professional reputation by self praise. It means that we should not make promises we cannot fulfill. It means the protection of each other, but especially the protecting of the welfare of the patient.

Is not this simple and practical and true ethics, and like all true ethics the result of experience, the great teacher?

We deserve congratulations for being on a higher plane than that occupied by most of the community. I do not mean higher socially or morally or religiously, but in that we have grasped more of the underlying principles of ethics governing community, and have embodied them in our code. We have eliminated part of the selfishness, and woven in some altruism, but not even yet are we entirely free from the commercial spirit, and so long as we devote our attention to the manipulation of metals and porcelain (even though artistically) instead of working toward finding the cause of the diseases which we treat, and trying to prevent them, we are liable to be accused of living by and through the misfortunes of others, and it may be said perhaps with a degree of justice that we would not prevent the disease if we could, for fear

of spoiling our business. Certain it is that we are not devoting a great deal of time or thought to this phase of dentistry, and it is probably because it does not pay.

Some of you may possibly suspect from what I have said that I believe that whatever costs a sacrifice is for our good. I wish to correct such an impression, for selfishness enters as strongly into ethical ideas as does altruism; and if any one does not believe it I could advise him to read Herbert Spencer's "Data of Ethics." He demonstrates that as a rule that which gives pain is injurious, while that which gives pleasure is for the good of the individual, but both must be modified to be best for the community.

Now some one may ask me what is to become of the man who does not follow the ethical? I will answer, just what becomes of any form of life which tries to go contrary to the order of things. If he has missed his work he cannot make it up by leaving duty. You might ask what would become of the oak germ which sent its leaves into the ground and roots into the air. It would certainly die; but if it made the most of its advantages it might become a sturdy oak, but by no possibility could grow itself into an apple or cherry tree.

So with us; we have the germ of manhood; it may be blighted or may become useful. Not many can become great enough to bear fruit which shall nourish coming generations, but we can all become men worthy to be called professional men; but in order to do so we must recognize the fact that we are born to community and must adapt ourselves to the ethics of the same and progress with them or die.

In the great economies of nature we find one form of life supplanted by another—a nebulous mass condensed into an earth; the tender and simple form of vegetable life giving way to hardier forms; the lower order of animals giving way to the higher; primitive man crowded back by the man of greater intellect; one civilization merged into a higher; people of one religious faith converted into another; one scientific hypothesis disproven and another promulgated. In fact, all seems change and progress.

So will our ethical codes be modified to advancing civilization; so must we keep in step with this march of progress, ever striving toward that higher and yet higher sense of duty which society demands of us.

Local Dental Societies.

By A. M. Harrison, A. M., D. D. S., Rockford, Ill.

During the Northern Illinois Dental Society session of 1897 plans were made for organizing "The Odontological Society of Rockford, Auxiliary to The Odontological Society of Chicago." Drs. Brophy and Ottofy, of Chicago, were instrumental in effecting the temporary organization. A permanent organization, the election of officers and adoption of the constitution were accomplished November 5, at a meeting in the offices of Drs. Helm and Reed.

The preamble of our constitution is as follows:

"We, the undersigned, hereby declare ourselves an association for the original investigation of subjects included in the science and art of medicine, surgery, chemistry, dental surgery and the collateral sciences. To elevate and sustain the professional character of dental surgeons, and to stimulate them to acquire scientific knowledge, and to encourage among them a desire for original work and scientific research."

The regular meetings of our society are usually held in the offices of our members the third Friday evening of each month. During the past year we met four times at "The Nelson," where we banqueted before the regular meeting. At each meeting a paper is read by one of our number. After the paper has been reviewed by two members who have had a chance to read it, the discussion becomes general, and every one present must take part. It is just here that we claim an advantage over the larger dental societies. The object of mutual improvement cannot be fully accomplished by listening to other men's papers and discussions, however excellent they may be. The president of the college I attended used to tell us students that a liberal education did not consist in memorizing word for word what we found in our text-books, or simply remembering what the professor said. He said: "You will soon forget much of your Greek, Latin, higher mathematics, etc.; but if you fail to master the principles involved, to systematize what you study, if your studies do not train you to think for yourselves and make you able to express your thoughts in a logical, clear, concise manner, your time is lost and the earnest endeavor of the faculty to truly educate you must meet with failure." After all, education is the developing, the drawing out of one's possibilities, rather than cramming dates and facts into the cranium.

We should absorb information only in order that we may digest and use it just as we do our food. If we listen to a good paper and the discussion that follows with the idea that we are to speak on that subject, we receive a double benefit. In the first place, we pay much closer attention, thereby securing full benefit of the writer's thoughts, which are thus indelibly stamped upon our memory; secondly, our mind is stimulated to greater activity that we may recall similar experiences in our own practice, or points to disprove some argument we deem faulty.

These monthly meetings with the papers and general discussions are of especial value to the young practitioner, and others who are rather diffident about taking an active part in such work. Many of these men are good thinkers, and these informal discussions bring out many valuable points. The speaker gradually gains confidence and is prepared to take part in discussions in larger societies. The man who writes the paper is benefited probably more than any of his hearers, because the thought he must give his subject unconsciously influences him in doing better work along that line.

To quote from one of our essayists, "I am sure that I am making better rubber plates since I began studying vulcanite as my subject for a paper."

I am reminded just here of a statement made by Dr. C. N. Johnson, of the Chicago College of Dental Surgery. One of the boys of our class asked him: "Professor, all things being considered, what do you regard as the best filling material for teeth?" Dr. Johnson unhesitatingly replied: "Brains." Then he explained why brains are the "sine qua non" of all dental operations.

Any organization that stimulates study of dental subjects, operations, instruments, etc., must benefit dentists; and that organization, other things being equal, which meets most frequently and causes every member to use "the gray matter" of his cranium will do the most good.

Of course, our Odontological Society is not superior to the Illinois State Dental Society, but I do believe our members are deriving more benefit from it than they are from the State society.

In our discussions we discover that various methods, instruments, materials, etc., are used by different members for similar operations, and with reasonable degree of success. This teaches us that our way is not the only one possible; and often when

we have tested some of the other methods suggested we find that our way is not even the best, a point we should be anxious to know if such is the case.

Our frequent meetings engender such a strong feeling of good fellowship among our number that any adverse criticism which we might be tempted to suggest to a patient regarding some previous work of a fellow-member is quite impossible. I believe we never benefit our profession or ourselves by speaking disparagingly of a brother dentist's honest efforts toward success; we may do him a great and undeserved injury, and we certainly weaken that patient's confidence in our profession. If we cannot sincerely compliment the operation, we can assure the patient that the operation was probably the best that could have been done under the circumstances; that the dentist doubtless was not at fault; anyway if he erred in judgment, he certainly would gladly rectify it. There are so many things to be considered in judging another's work. There may be two or three causes unforeseen by the operator and unknown to us that contributed to that failure. We tell the patient all this so he knows that we mean it. You know it is possible to give our hearers the idea that we have the greatest contempt for certain methods, or the man who uses them, and yet we never say a word directly against him. It may be accomplished by the inflection of the voice, the lifting of the eyebrow, the shrug of the shoulder, or even by silence. To illustrate, a friend of mine in a southern town chanced upon two small darkies, who were pulling each other's wool and swatting each other with all their might. He separated them and inquired the cause of their "late unpleasantness." The blackest one replied, "He called me a niggah, suh." "Well, are you not a negro?" asked my friend. The little fellow cast an angry look at his antagonist and answered, "Yep, dat's so, boss, but it was *de way he said it*."

At our meeting in June, Saturday afternoon was devoted to clinics. Drs. Pruyn and Schwartz, of Chicago, were with us and contributed to the interest of the meeting.

"Man is a social animal," and,
All work and no play,
Makes us a dull day.

Hence, during July, August and September, instead of papers, discussions and clinics, we have an outing at least once every two

weeks. We usually leave the office at 3:30 P. M. and go up the river a few miles on one of the excursion boats. Of course, we take our "affiliate members," otherwise known as our wives and "infantry." Upon reaching one of the parks, various amusements engage our attention till about 6 o'clock, then we gather around the festal board and eat the most satisfying meal we have had since the previous picnic, when our appetite was of similar proportion. Later in the evening there is another boat ride, possibly by the light of the moon, but even starlight makes our grand old Rock River enticing. As we are homeward bound and the kindly jokes and humorous stories go round, or as we join in some familiar song, around which clusters memories of other moonlight evenings, the years seem to roll backward, and we are in thought all young again. Even our dignified "Curator of the Museum" becomes as young and frisky as any freckled faced boy in Freeport, one of Rockford's suburbs on the west.

We certainly do better work in our offices, enjoy life more, think a hundred per cent more of our fellow dentists and their families, than would be possible were we deprived of these hours of relaxation together.

You doubtless remember that as boys we reserved the largest, ripest cherry till the last so as to leave a good farewell. Well, our final outing for this season consisted of days spent at Lake Delavan, where we enjoyed the hospitality of Drs. Kitchen and Gill, who placed five cottages at our disposal. We were a happy family of twenty-eight, including Mrs. Sowle's greyhound, "Lady of the Lake," and "nurse girl of the Odontological Society." It would require volumes to tell the enjoyable features of that trip; the beauties of the lake, the gloriously tinted autumnal foliage along the shore, the perfect days, the stories and conundrums told as we sat on the verandas after supper, the fish Dr. Allen's boy caught and Dr. Kerr let get away, how many fish Drs. Helm and Sowle did not catch, and how many Dr. Kitchen did catch out of other fellows' fish boxes. Just ask any man, woman or child who was there and you will learn that it was an ideal trip.

Oh, the sights you see, and the things they do, at Delavan, at Delavan; we will always go there in the fall.

I have written this mainly with the idea that some of you may be led to form a similar organization in your own town, where there are half a dozen or more dentists. You certainly will find that your

interest in everything that pertains to our profession will be increased; you will have a better opinion of the ability of, and a kindlier feeling for your local fellow dentist; your families will become the best of friends; and the rest of your townspeople will stand in utter amazement at the idea of you dentists meeting together for mutual improvement and pleasure, each of you willing to impart any knowledge you may have gained in your studies or practice. Such actions will convince the people that dentistry is a profession, not a trade, and that we are earnestly striving to be liberal, broad minded, professional gentlemen.

Inlays and Cements.*

By W. V-B. Ames, D. D. S., Chicago, Ill.

In conservative practice cases are presented in large number in which there has been such a loss of structure that the ordinary gold foil operation cannot be readily decided upon, amalgam we do not favor with such conditions, and the loss of structure does not necessitate a crown.

Without going into the difficulties of gold foil operations in cases of cavities extending considerably beyond the gum margin, with extensive loss of substance laterally and awkwardly located in the arch, and without going into the objections which I personally have to the use of amalgam in such a case, I will assert that for nine years I have been using, with much satisfaction, the gold inlay principle in the management of such conditions. The use of the porcelain inlay is so circumscribed by the lack of strength, as compared to that of the gold, that it will not be considered in this paper.

I would have been reluctant to write of this gold inlay process a few years since, when I would have felt that the large proportion of young operators were much better trained in the manipulation of gold foil than in the working of gold with a blowpipe; whereas now the general craze for crown and bridge work is an incentive, I suppose, to the dental student to become proficient in the management of metals under the burnisher and blowpipe.

Possibilities are great in this process for covering up a multitude of shortcomings, but so it is in the promiscuous making of

*Read before the Chicago Dental Society.

crowns; so I feel that a poorly adapted inlay will be the source of less discomfort and disaster than a botch crown, and take the chances of advocating the building of them with all the care and precision which the operator can command.

My satisfaction with these has been such that I have come to use the process many times when the difficulties of a gold foil operation would not be serious, and this, because I can practice extension for prevention, without at the same time extending for anchorage, and seating, as would be necessary for the foil operation.

Extension for prevention I most heartily endorse, and practice it in a way which would suit the most enthusiastic; but in a large majority of cases I get along without paying any attention to the

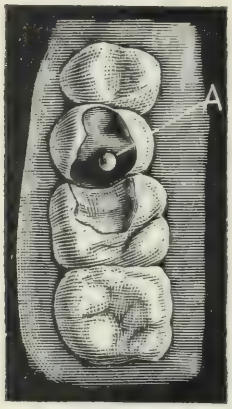


FIG. 1.



FIG. 2.

seating of the filling, as this is accomplished for the use of foil, since the anchorage and seating, if it might be so called, is generally effected by extensions of the inlay in some way upon the occlusal surface.

Since I have referred particularly to proximal cavities reaching well beyond the gum margin, I will first consider in detail the preparation for and construction of an inlay for a typical cavity in a bicuspid containing a vital pulp. We will suppose a disto-occlusal cavity either above or below in which a gold or amalgam filling has failed to prevent perfectly the progress of caries. In such a case the caries has usually extended laterally, one side or both, and has usually disfigured the seat of the original filling. In such a case the lateral walls must be cut away freely because they have become undermined, and are frail, and because a greater extension is considered advisable for the prevention of the recur-

rence of a similar failure. The new caries has made an inclined plane in the region where a respectable seat for the previous filling had possibly been made. If the previous filling had not been carried through the fissure of the occlusal surface, this must be opened almost universally, and if it had been done previously it is usually well to cut some lateral extensions.

This preparation can usually be accomplished by means of chisel, carborundum and excavator without the use of rubber dam. I speak thusly because the carborundum point, sharp until worn out, has given me much satisfaction in taking the place of burs, whose cutting qualities are too often unsatisfactory. Such a preparation is shown in the card of models of bicuspids presented for

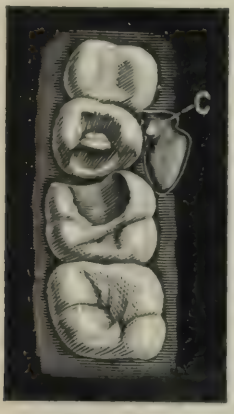


FIG. 3.

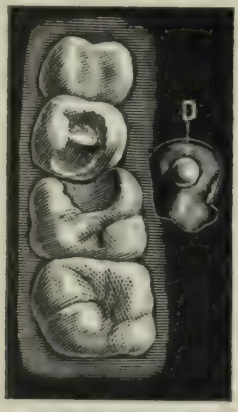


FIG. 4.

your inspection. The proximal cavities in molars are treated on so nearly the same plan that one description will answer for both classes. After such preparation I find an advantage in taking a fairly correct impression of the cavity with modeling composition (Ash & Sons', perfected), making to this a model in plaster or oxyphosphate, to which the piece of thirty-six gauge 24 k. gold can be approximately burnished and trimmed, saving much annoyance and gum laceration; overdoing the entire fitting in the mouth. In fitting and filling this matrix, solder, 22 k., is added, first in the most depressed portion of the occlusal surface anchorage in the case we have under consideration, with continued fitting and addition of solder till the contour is obtained. At a convenient stage of the contouring it is well to tack at the proper point a small globule of high grade gold (A, Fig. 1 and 5) to serve as a stay and guide for shaping the proper contour in crystal gold or foil (B, Fig. 2), the interstices of which are to be run full of the solder.

In obtaining the occlusal surface anchorage the pure gold plate will often tear or puncture in being fitted to abrupt depressions, into which puncture and depressions gold foil can be formed and its interstices filled with the solder, giving a substantial projection (C, Fig. 3 and 5) to be grasped by the cement. This is a typical proximal case. Deviations from this are various. There are the pulpless bicuspids and molars where plenty of anchorage can be obtained by either puncturing the matrix at the proper point for the insertion of a dowel in the pulp canal, or by simply placing a globule of high grade gold of proper size in the pulp recess of the cavity, fitting the pure gold matrix to this and the cavity sufficiently to be able to tack the globule to the reverse side of the matrix for the main anchorage (D, Fig. 4 and 6), and proceed as before described. Other favored cases for this process are extensive occlusal cavities having frail walls, large buccal cavities extending beneath the gum margin, and with annoying extensions upon the mesial or distal proximal surface. Also proximal cavities in incisors calling for the restoration of an



FIG. 5.

angle and extension across the incisal edge. The strength of the inlay is especially valuable in this condition.

Lastly, I will mention the restoration by tipping of abraded teeth. The 22 k. solder surface for this purpose gives a freedom from the objectionable feathering up at the edges from wear, which used to annoy me when I treated these cases by the gold foil method. A combination of platinum and gold can be secured for such surfaces, giving extra texture and platinum and gold color, by building down the form with platinum sponge and filling the interstices with the 22 k. solder.

This process is a satisfaction to me, because it gives me the means of caring for teeth which are not easily amenable to the gold foil treatment, and with which I could not conscientiously use amalgam, cement unprotected would not serve a useful purpose for a sufficient time, and crowning is not strictly called for.

In most cases where I would use an inlay in the cavity of a tooth which would be condemned for crowning by most others, I would save undisturbed at least three-fourths of the gingival mar-

gin, which appears to me a great consideration. It is a satisfaction because it involves less wear and tear on the patient. No long siege is absolutely demanded, as the process can be chopped off at any stage. The proximal surface can be given its finish in the fingers of the operator, and the ideal knuckled contour can be formed without the least separation for the purpose of *finishing* as with the foil or amalgam operation. Time is often saved, but, if not, I have come to feel that the end justifies the means, for I must confess that I did not, in my most skillful days in the use of gold foil, serve my patients to the extent that I now serve them by the use of the gold inlay.

Failure from caries about the inlay, such as are common in connection with gold foil and amalgam operations, have been extremely rare in my experience. Some cases, which could be counted on the fingers of one hand, have been presented in which caries had started sufficiently near to involve the inlay, but there is not in these cases the extension of the caries along the original cavity walls that is so often met in connection with gold foil and amalgam similarly conditioned. A faulty joint, subjected to severe attrition, will need patching unless the cement is one of the few reliable ones, when the cement will be found intact just beneath the surface. In nine years of inlay practice I have used good, bad and indifferent cements, and have made some faulty joints, so that some repairs have been necessary, but, on the whole, I am satisfied, since the repair of an inlay involves only the replacement of a line of cement seldom to the depth of the enamel and in length a small portion of the periphery. This can readily be accomplished with gold or amalgam.

I realize that this is not a process which will be readily taken up by the majority of practitioners. One must have an aptitude for goldsmithery to be attracted by the process, and then I realize again that the strong prejudice against cement used in this way must be overcome by some convincing proofs that all oxyphosphates are not cements, but that some are almost as reliable as we would wish them. I have attempted at odd times in the last five years to call attention to the unreliable cements by excluding them from a list which I considered covered the fairly reliable ones. It is gratifying to have my opinions verified very closely by the recent experiments of Dr. Wedelstaedt, who finds that the cements possessing merit are very few indeed in number, and it seems safe to

prophesy that this work, coming from a disinterested, unprejudiced investigator, will do much to spur up cement producers to giving us materials to better answer our needs.

Personally, as a cement maker, I am under great obligations to Dr. Wedelstaedt for tests which he has made for me since the writing up of his first series of crushing tests, of which I knew nothing until they were ready for publication. Samples of my cement used in those tests were sent to his city nearly two years prior to their use, otherwise my material would have led the field in a manner that would have created some surprise, as will appear in the course of time, when his later work is published. I have been making and using for some months a cement very much stronger and infinitely better as to porosity than that reported on by Dr. Wedelstaedt.

In the matter of spatula and slab for cement mixing I have decided preferences. I insist on a generously proportioned spatula, and I prefer a slab which gives me plenty of room to spread myself and the material. I also insist on a noncorrosive spatula, and I know of no base metal or combination from which such a spatula can be constructed. If an acid solution has been properly compounded and brought to zero, as Dr. Black would say in regard to amalgam, any solution of the metal of the spatula will have a deleterious effect, and especially if this be of iron. It has been ascertained by the intentional addition of both ferrous and ferric phosphates to the acid solution that crystallization is very perceptibly hastened, even to the extent of causing the generation of a considerable amount of heat. The really safe spatula I consider is one of platino-iridium. A good substitute for this can be made by covering a properly shaped steel spatula with a jacket of platinum formed smoothly to the blade, removed for soldering with a high grade gold solder, and then fastened at the open end at the butt of the blade with soft solder. When this jacket is worn out it is easily removed and a new one substituted. I do not think it uncommon practice to dip acid from the bottle with a steel spatula some minutes previous to making the mix of the cement, during which time there would be considerable action of the acid upon the steel. This immersion of the steel is also apt to start crystallization in the mass of the liquid, the bugbear of cement makers. The liquid should be dropped from the bottle, or, better still, a minimeter should be used in a perforated cork, and this minimeter I would

advise being kept in a duplicate of the liquid bottle, as, if immersed at all times the tube is liable to be the means of starting crystallization. I would say, remove the cork carefully and stand on its butt end, and if any crystals have formed on the cork or bottle mouth, remove these with some absorbent paper. With the minimeter transfer the required amount of liquid to the slab and return the minimeter and bottle cork to their proper places, having been careful to avoid picking up any foreign particles. I would advise forming a cap of bibulous or filter paper over the cork and neck of the acid bottle. It will take care of any liquid which may exude and will be a convenience in handling the cork. These may seem like trifling instructions, but the proper crystallization of cement depends so much on all conditions being right, that I would feel I had not covered the proper scope of my paper if they were not given. The slab and spatula should also be scrupulously clean, without a trace of the previous mix of cement. Any trace of crystallized cement will hasten the crystallization of the mix in hand.

With painstaking use of the improved cements at our command, I feel that we will make a new era in cement history.

Some General Reflections.*

By J. H. Woolley, Chicago, Ill.

Four or five things have interested me in the management of devitalized teeth:

1. The use of heat as an agent for the destruction of pathogenic germs.
2. Does heat lessen the resistance power of enamel?
3. Reasons for embalming.
4. Obliterated canals.
5. Dangers in filling pulp canals.

The first point I have previously discussed. The second is, whether heat lessens the resistance power of enamel by the use of the root drier. The affirmative of this question has been maintained by some, notably Drs. Black and Cook. It is my purpose only to discuss one point in a paper, written by Dr. Cook, on "Heat and its Effect Upon Dentine." He says: "In raising the temperature of the root canal drier from 90° to 130° C. for a few minutes, would not be out of place, but if the temperature be raised

*Read before the Odontological Society of Chicago, December 20, 1898.

to where you get the hissing sound with the root drier, which is 170° C., there will be a drying out of the organic substance, thus rendering the tooth brittle;" or as Dr. Black says, "lessens the resistance power of the enamel." This conclusion upon the part of both is reached by experiments made *upon teeth out of the mouth*. I would like to quote from Dr. Mathews, of the Physical Laboratory of the Chicago University, who has given some thought and opinions upon the effects of heat on dentine. He says: "The question arises whether or not in drying out the root canal of the tooth, using the temperature high enough to render the canal aseptic, lessens the resistance power of the tooth."

Generally speaking, a certain quantity of water is present in all substances, whether crystalline or amorphous. Certain crystalline salts hold a certain quantity of water, as water of crystallization, the drawing off of which by heat destroys the crystals ($CuSO_4+H_2O$); other substances, especially the colloid substances of the animal body, take up water by imbibition, the drawing off of which by heat renders them brittle and nonelastic.

Regarding the dentine of the teeth, which is composed of twenty-eight parts animal matter (colloid) and seventy-two parts earthy (inorganic matter), we know that none of the salts which form the inorganic part require water for crystallization; or, in other words, their crystalline form does not depend on the presence of H_2O as in the case of $CuSO_4$. The principal earthy salts entering into the formation of dentine are phosphate of lime, forming about eighty-six per cent of the earthy matter, carbonate of lime, traces of fluoride of calcium and phosphate of magnesium; none of which hold any H_2O in their crystalline form, at H_2O of crystallization (Remsen). Therefore, all the H_2O held in dentine is not held as H_2O of crystal, but held in the animal matter (colloid) by imbibition and in the tubuli and interglobular spaces. The drawing out of this H_2O from the colloid substance and from the tubuli of the teeth by heat would necessarily render the tooth temporarily brittle and nonelastic, as well as causing a shrinking of the animal matter; but in the presence of H_2O or moisture the colloid would soon imbibe H_2O and return to their normal saturated condition. Therefore, the application of heat cannot destroy the resistance power or elasticity of dentine only so far as it acts upon the animal matter, and in this its effects can only be temporary. The tooth in a living subject can receive sufficient

nourishment or the cementum still nourish it through the medium of the peridental membrane, and keep its healthy functional activity after the death of a pulp. This activity is manifested in various ways, one being in a constant and natural supply of moisture which the tooth receives in the mouth; another point lost sight of in the experiments of Dr. Cook is the per cent of loss of moisture in the crown in drying by heat.

Dr. Allport claimed in his experiments, confirmed by my own, that when the heated root drier was passed into the root canal the moisture to a considerable degree flowed back into the crown of the tooth on the principle of regurgitation, leaving the tooth unimpaired. By means of some tabulated statements I intend to show you by weight the loss of moisture in a few teeth out of the mouth after the use of the root drier. The loss in some teeth is small compared with the whole amount of moisture in the tooth before drying.

		G.	M. G.
	BICUSPID.		
1.	Before desiccating	1	4902
	After "	1	4732
	Loss		0170
	MOLAR.		
2.	Before desiccating	23	5902
	After "	23	5696
	Loss		0206
	MOLAR.		
3.	Before desiccating	25	2832
	After "	25	2018
	Loss		0814
	CENTRAL INCISOR.		
4.	Before desiccating	23	4472
	After "	23	4404
	Loss		0068
	MOLAR.		
5.	Before desiccating	24	1708
	After "	24	1412
	Loss		0296

The following example of the power of a live body to resist heat has been given by Tait in his work on heat. In a baker's or sculptor's oven at a temperature far above the boiling point of

water, on one occasion even at 320° F., so high indeed that beefsteak was cooked in thirteen minutes, Tillet in France, and Blagden and Chantry in England, remained for nearly an hour in comparative comfort; but though their clothes gave them no great inconvenience, they could not hold a metallic pencil case without being severely burned.

Embalming. By the aid of the root drier we dry the canal and destroy any microörganisms that may have been left there. After thorough dryness has been obtained, we flood the canal with eucalyptus, which by imbibition is carried into the dental tubules of the root, after which the surplus of this antiseptic is removed by the aid of cotton or other absorbents. By this treatment the root filling seals up the intertubular spaces, preventing any micro-organisms finding their habitat there. Thus the root is embalmed, and we then proceed as in point five.

We now reach the fourth point, obliterated canals. It had been commonly believed that when signs of an obliterated canal were discovered, it had better be undisturbed, on the ground that no future trouble was likely to arise; but the contrary has been my experience upon examining of many cases, taking considerable time and trouble. I have found within one-half of a line of the apical foramen an open canal containing pus, showing the presence of pathogenic germs. This opens up an interesting subject, namely, whether the excursion of these germs has carried them through the less organized structure of the canal, or through the blood into the apical space, thence to this open canal at the end of the root. A paper by Dr. Leon Williams on the structural changes in the enamel, published in the July (1898) *Cosmos*, bears on this subject. He has shown by photographic cuts that microörganisms have attacked the cement substance, uniting the enamel rods, and have also made further excursions into the dentine. Is it not possible, then, that in the same manner microörganisms can move along the line of the obliterated canal, which is unorganized dentine, down to the point where an open one presents itself, and infect it also?

Fifth. Danger lines in filling pulp canals.

There are certain conditions to observe in root filling, which, if neglected, abort the end in view. A sense of pressure, noted by the patient, will determine whether the filling has reached the apical foramen; but we must also be able to determine whether

this pressure is from the filling or air. There is no better way to avoid confusion here than by observing certain rules in the following order: Apply the cofferdam and dry the root canal and embalm as in point three. Second, flood the canal with chloroform, and by the movement of the broach back and forth in the canal, air bubbles will escape. Afterward work chloro-percha into the canal. A new danger arises here, i. e., in the act of removing the broach air will rush into the pulp canal. This can be avoided by seizing the broach with pliers and drawing it slowly out, leaving gutta-percha in its place. I have presented a few points, but do not pretend to have exhausted any one of them. If I have been able to make any helpful suggestions, or to offer any topics for discussion, I shall have accomplished my object.

President's Address.—Recommending Oral Hygiene.*

By Laurence Leonard, D. D. S., Waseca, Minn.

It is customary for a president to make certain recommendations to the body over which he presides. Many subjects crowd themselves upon the mind and ask for attention and expatiation. Of all that have knocked at the portals I deem none more worthy to be placed before you than oral hygiene.

After General Shafter captured Santiago, about the first thing Dr. Leonard Wood did was to order a thorough cleansing of the streets and the houses both inside and outside. And so should we, when through skill and reputation we capture a patient, the first thing we should do is to order a thorough cleansing, both inside and outside of the dental citadel, and to order under pain of death the evacuation of all foreign microbic residents. Thus may we preserve for our patients useful and more magnificent arches than ever the conquering Cæsar rode through. Oral hygiene means that we are to preach cleanliness of the oral cavity from the time we enter until the time we leave our office, that our patients are to practice from the time they leave until they return to our office not only the cleansing of the teeth but the whole oral cavity, that we are to practice most constantly the removal of all tartar, the removal of all worthless roots, the removal of all decayed teeth that are not to be saved, especially the wisdom teeth (which frequently should be extracted before they are even decayed at all), the removal of teeth that are not decayed—sound ones—

* Read before the Minnesota State Dental Association.

especially bicuspids and wisdom teeth, from their crowded condition become a menace to the adjacent teeth and a virulent home for streptococci (disease germs), the removal of all ill-fitting plates, crowns and bridges that are nauseating homes for odoriferous germs. In our professional line of duty what is the most difficult part for us to perform? Is it the inserting of a large contour gold filling two-thirds the width of the tooth? Not at all. Gold will cohere by mere contact and a little pressure, be it burnishing or malleting, it does not matter which, just as long as it is pressure of any kind. Pure gold is like a pure maid in love, all she needs is gentle pressure. Is it the making of a crown or bridge? I think not; all you need for this is gold, do not stint it, plenty of gold, and with a little mechanical and artistic skill your bridge is made. Is it the removal of one of those persistent pulps? No. Just give it time, just *wait* until it *dies* and it will practically remove itself. Well then, what is the most difficult for us to do? It is to look our patients in the face and tell them that before you can insert that filling that they and you must first become scavengers, stomatologists for not only that sitting but for days and weeks until every old root is extracted, all putrescent pulps and canals treated, every particle of tartar removed, and if the stomach be out of order, it treated also. Teachers of oral hygiene we should be until the patient has acquired the use of brush, quill and floss silk and the gums and oral cavity made healthy, sweet and clean.

When I say that there is a very large percentage of dentists who give but little attention to oral hygiene, I say it with regret, and after careful observation. Country and city dentists alike seem guilty of this sin of omission. Now, why is this? I can assign three reasons: Ignorance on our own part of the prophylactic benefits of oral hygiene, dislike of the work, and lack of compensation. We speak about educating the masses; it is a good idea, but I sincerely believe that many of us fail to fully grasp the far reaching effects of oral hygiene. How many of us can see with a keen, intelligent vision fine white flour breadstuffs adhering to the teeth, hour after hour and day after day, until it is converted into lactic acid? How many of us fully realize what Dr. Williams and Dr. Black have seen and described as the micrococci and streptococci clinging like a coat of glue to the unwashed surface of the teeth, and slowly but surely dissolving the intercement substances of the enamel rods?

I believe that if we could more fully realize those things we would practice and preach more oral hygiene. In 1893, in my president's address to the Southern Minnesota Dental Society, I dwelt entirely upon means to educate the masses. I have finally come to the conclusion that the dentist is the teacher through which education should and must come. I therefore recommend to you the more zealous teaching of oral hygiene and dental prophylaxis.

The Clinical Value of a Leucocyte Count in the Diagnosis of Pyæmic Infections.*

By Geo. Douglas Head, B. S., M. D., Instructor in Pathology in the University of Minnesota.

Leucocytes are present in the circulating blood of the normal adult in the number of 7,000 to 8,000 to the c. m. m.

In children the number is somewhat higher. Infants of one year or less, average about 12,000 white cells to the c. m. m., while in older children the count is 8,000 to 9,000 corpuscles to the c. m. m.

Under certain conditions, the number of white cells in the blood may be increased beyond the normal limits.

Such an increase may be very great, reaching 30,000 to 50,000 to the c. m. m., or it may be only slight, 10,000 to 15,000 to the c. m. m.

Any increase in the number of leucocytes of the circulating blood is called leucocytosis, or as some authors prefer, hyperleucocytosis. On the other hand, under certain conditions, the leucocytes in the circulating blood may be decreased below the normal count. Such a decrease is spoken of as leucopenia, and may descend as low as 2,000 white corpuscles to the c. m. m.

What forces act to occasion this rise or fall in the number of white cells in the blood has not been definitely determined. Leucocytosis, the more common of the two processes, has been theoretically explained by Virchow and Ehrlich to a stimulation of the blood making organs and a consequent overproduction of white cells. Lowit, finding that leucocytosis was always preceded by leucopenia, maintains that the increase is due to a regeneration of new white cells from the older forms.

*Read before the Minnesota State Dental Association.

Buchner and Romer hold that bacterial proteins circulating in the blood act to increase the number of white cells, first by stimulating the blood making organs to the production of new cells, and second by calling into the blood other leucocytes from their resting places in the spleen and lymph nodes.

The theory which, however, best explains leucocytosis is that advocated by Von Limbeck, Goldschneider and Jakob. These observers take the stand that there is no actual manufacture of new white cells in the production of leucocytosis but that the bacterial toxins circulating in the blood act in a chemictactic way to attract into the blood stream leucocytes which were before stationed in the lymph spaces, spleen and lymph nodes, and that these leucocytes added to those already in the blood cause the higher white blood count and the phenomenon known as leucocytosis.

To explain the diminution in the number of leucocytes in the circulating blood, two theories have recognition.

Lowit conceived the process to be one of cell destruction occasioned by some toxic product circulating in the blood.

Schults, Goldschneider and Jakob take the ground that there is no actual destruction of white cells in leucopenia, but that the decrease is caused by an exodus of leucocytes from the circulation into some of the organs and tissues of the body.

It does not matter in the consideration of this subject how we theoretically explain these phenomena. We know that they exist and that under certain conditions the leucocytes of the circulating blood may be increased or decreased beyond the normal limits.

Some of these conditions are physiological, such as the leucocytoses of pregnancy, of exercise, of digestion, and the like.

Such an increase of white cells is of importance from a pathological point of view only that the clinician making white counts with the patient in such physiological states must bear in mind the leucocytoses thus produced.

Other conditions causing an increase of white cells are pathological. Such are the leucocytoses of pneumonia, rheumatism, erysipelas, diphtheria, scarlet fever, secondary anæmia and especially all forms of septic infections.

There are no well marked examples of a diminution of white cells due to physiological causes, but the diseases tuberculosis, typhoid fever, malaria, la grippe and measles furnish pathological examples of leucopenia. These variations in the number of white

cells in the blood occasioned by pathological processes have been found to be fairly constant and are now taken advantage of as an aid in the diagnosis of certain diseases.

It is as if the counting of the white blood corpuscles had added an additional objective symptom to the category of manifestations considered as characteristic of certain pathological states which materially assists in their recognition.

It is to this latter condition, namely, the presence of pus in the body and the consequent leucocytosis which it occasions, that your attention is directed. The presence of a pyæmic infection in the body is usually attended by a well marked increase of white corpuscles in the circulating blood.

This fact holds true whether the infected point be a furuncle on the back of the neck or an abscess in the middle ear or a purulent inflammation involving the pulp cavity of a tooth. Even if the process is more severe and involving more important structures, such as the vermiform appendix or the Fallopian tube, this same increase in the number of leucocytes in the circulating blood is always present if only the inflammation has gone on to suppuration. The height to which the white corpuscle count may rise varies, according to the severity of the inflammatory process, the location of the infection and the duration of time which has elapsed since the pyæmic process first began.

If the inflammation has continued some time, say three or four weeks or more, and the pus has been well walled off from the surrounding structures, the leucocytosis will not be as large as if the process were in its first stages.

For example: Some months ago the writer counted the leucocytes of a patient who had had a swelling in the right abdomen for twelve years. The white blood count was only 11,000 leucocytes to the c. m. m. A count too low to make a positive diagnosis of an abscess. Yet, when subsequently the patient was operated upon, the swelling was found to be composed of pus. Had this patient been seen early in the history of the case the leucocyte count would in all probability have reached twenty or thirty thousand white cells to the c. m. m., and a correct diagnosis of the existing condition made. Here, then, is an exception to the general rule of a well marked leucocytosis with pyæmic processes, namely, when the inflammation has been of long standing and the pus well walled off from the surrounding structures. There is also

another exception which must here be noted. In some instances where the septic infection is most severe and rapidly causes fatal results, no leucocytosis will occur as a sequence of the infection. An example of such exceptions are the rapidly fatal cases of septic peritonitis where the patient is attacked suddenly and is quickly overcome by the disease, no increase of white blood corpuscles will be found in the circulating blood.

Aside from these two exceptions we may adduce the general law "That in all cases of septic infection accompanied by the formation of pus a well marked leucocytosis results." By a well marked leucocytosis we mean a white blood count of about 15,000 leucocytes to the c. m. m., the normal count in an adult being considered as 7,500 white cells to the c. m. m.

The practical value of this knowledge to the physician and dentist, once it is secured, cannot fail to impress itself upon your minds. For example: Many times the question arises does or does not this swelling contain pus? In the experience of the medical man that swelling may be deep in the abdomen, where a rigid abdominal wall and an absence of characteristic clinical symptoms would make a diagnosis almost if not quite impossible without an estimation of leucocytes. In the experience of the dentist that swelling may be deep in the tissues of the jaw or buried at the very root of the tooth where only the pain and the swelling give any clew as to the character of the process. Under such conditions the white blood count will many times give a clew to the character of the inflammation and assist the clinician to a correct diagnosis.

Again, repeated white blood counts of cases of suspected septic infection will give positive evidence as to whether the process is extending and involving new areas of tissue or whether it is well localized and walled off from the surrounding structures. If the white blood count increases from one day to the next the inflammation is extending. If the count is stationary and there is neither an increase or a diminution the process is not involving new areas of tissue. If the leucocyte count diminishes from day to day the infective process is receding, recovery by resolution can be anticipated and no operative interference is needed. Again, in the determination of the question, is this swelling cystic, hæmorrhagic, serous or purulent, the leucocyte count is of great value.

Cystic, serous or small hæmorrhagic swellings cause slight, if any, leucocytosis, while a pus formation produces a large leucocytosis, which differentiates it completely from the other varieties.

In inflammations involving structures which cannot be well examined by the ordinary means at our command, such as the chamber of the middle ear, or the antrum of Highmore, a white blood count is of great value in that it tells us whether the process is catarrhal and no pus has formed, or whether the infection is pyæmic and has gone on to suppuration. In the one case no operative interference is needed; in the other, no delay should be tolerated. The writer well remembers a case of otitis media, in which the clinicians were in doubt for some time as to whether the process was catarrhal or suppurative. A white count was made showing 21,000 leucocytes to the c. m. m., and the diagnosis of otitis media with pus formation was made. Later, the pus burroughed through the tympanum and discharged from the external ear.

Likewise, in the differential diagnosis between osteomyelitis and inflammations of bone of a tubercular or malignant variety a white blood count assists in arriving at a correct conclusion.

Since, in osteomyelitis, there is almost always a leucocytosis, while in bone inflammations of the other varieties no leucocytosis occurs.

Also, in determining whether severe pain, involving areas about the face is of neuralgic or infective origin, the leucocyte count is of value. Neuralgias cause no leucocytosis, while pyæmic infections causing pain are always accompanied by an increase in white cells in the circulating blood. In these and many other conditions, not here mentioned, but which will doubtless suggest themselves to you, the counting of the white corpuscles of the blood is of practical clinical value to the dentist as well as the physician.

Before proceeding to give in detail the white blood counts in certain pus formation the writer wishes to call your attention to the methods pursued.

At first thought one might think the process too complicated for the ordinary practitioner, but I feel sure that such fears are not well grounded.

The red blood mixer of a Thoma Zeiss hæmocytometer and a bottle of one-third per cent glacial acetic acid solution in water are constantly carried in the hand satchel. When a patient is seen in which a white blood count is desired to be made, the ear is punctured with a needle, the mixer is filled with the proper amount of blood and acetic acid solution. The apparatus is then

well shaken so as to thoroughly mix the blood and acid, the mixer placed in the case and taken to the office where the count is made with the microscope.

This method does away with the necessity of carrying an instrument to the place where the patient lives and is accurate, provided the apparatus is well shaken previous to counting.

The writer has found no loss of cells as a result of one or two hours' delay previous to making the count, and believes that no error from loss of cells arises even though the estimation is not made at once. The time in making the count when accustomed to the procedure, should not require over fifteen minutes.

Bearing in mind that the normal white blood count is 7,500 leucocytes to the c. m. m., the counts made under the following conditions where pus was present will have their full significance:

	Disease.	Leucocyte Count.	Result.
Case I.	Otitis media	21,000	Pus evacuated.
Case II.	Felon on index finger	17,000	" "
Case III.	Abscess of the breast	32,500	" "
Case IV.	Pelvic abscess	20,600	" "
Case V.	Appendicitis	16,000	" "
Case VI.	Gum boil	27,000	" "
Case VII.	Boil on the neck	21,000	" "
Case VIII.	Abscess in Douglas cul de sac	15,000	" "
Case IX.	Abscess of parotid gland	35,000	" "
Case X.	Rectal abscess	18,000	" "
Case XI.	Stitch abscess following laparotomy	15,000	" "
Case XII.	Appendicitis	19,200	" "
Case XIII.	Pelvic abscess	31,000	" "
Case XIV.	Appendicitis	17,000	" "
Case XV.	Appendicitis	20,000	" "
Case XVI.	Swelling in groin	21,000	" "

While the writer is not a dentist and has made no leucocyte counts with localized abscesses, about the teeth and lower jaw his experience with counts made in patients suffering from pus formations in other parts of the body has been so generally of one result, namely, a well marked leucocytosis where pus is found and an absence of leucocytosis where pus is absent, that he unhesitatingly recommends this procedure as a means of determining whether the inflammatory processes in these regions are of a purulent or nonpurulent character.

PROCEEDINGS OF SOCIETIES.

Chicago Dental Society.

A regular meeting was held in the Stewart Building, October 4, 1898, with the President, Dr. J. E. Hinkins, in the chair.

Dr. C. E. Bentley read a paper entited, "The Application of Comparative Dental Anatomy."*

Mr. Pearsall, of Dublin, Ireland, followed with a paper on a similar subject (see page 1), after which they were discussed jointly.

DISCUSSION.

The discussion was opened by Dr. G. V. Black. He said: *Mr. President, ladies and gentlemen:* I have been interested in the papers that have been presented this evening. I am always glad to hear papers by members of the society bearing upon subjects not directly related to the manner of doing this or that thing—something along the development of our knowledge of the scientific relation of dentistry to thought in fields correlated either directly or indirectly. I have not had time to make any studied discussion of this paper, although Dr. Bentley has given me every opportunity. My engagements at the present time are such as to absorb my whole attention.

The subject of evolution is one in which we are all deeply interested—one that we all need to study closely and carefully. It is a subject that has not been developed in a day. Evolution is an evolution. It has been evolved slowly, and we may almost say by natural selection, gradually being developed, incomplete. We do not know all about it. With Darwin it was a discovery—not an invention—and when he began his work upon it he found that other men back through the ages had been writing about it and furnishing him material from which to build up his theory. And so it is going on from decade to decade, and in the future we will know more about it. With many it seems that evolution teaches that man was derived from the ape, or some such source. To my mind it does not teach such a doctrine. Man has been derived from a type lying further back than this—a type of which we know nothing practically, the same as the ape has been derived very far back. We may suppose one creation, or as many creations as we choose,

*See page 895, Vol. XII.

and yet not disregard the doctrines of evolution. It is the continual change consequent upon the continual changes of this planet, the continual changes of the relation of life to its surroundings and the improvement by natural selection, not necessarily improvement, for the fittest to survive are those best suited to the surrounding conditions, and the fittest may be a retrograde in this locality, with improvement in another locality, and so on, but in the long run an improvement or adaptation of life to its conditons, so long as this earth of ours is adapted to the maintenance of life.

In the study of the development of the teeth we must refer to the teaching of fossil remains. We see about us animals with different forms of teeth, adapted to different purposes, and we may find among the living things about us and in the sea pretty much all of the kinds we will find in the fossil remains of the past. Nearly all of them are present in some form of life to-day. We are able to study those teeth in the living forms about us, and are able to assign those we find in fossil remains to similar forms; and where we find teeth that are different in size or in form, we are enabled by their form to assign them to animals of certain forms and habits, for teeth are adapted to the food the animal lives upon. When we study through the list of fossils that have been discovered in the earth, in the rocks, we find a continual change in the types of teeth. If we go back to the lower rocks we will find only the conical teeth. The animals which lived in that day presented only the conical teeth, and as we rise up through the strata of the rocks we will find a continual development of the forms of teeth. First, they began to form cusps and reduced the number of teeth. Then they formed more cusps and reduced to a greater degree the numbers of teeth until we arrive at the teeth of the higher animals and those of man. This is what we find in fossil remains. We find, of course, a series of animals that have become extinct, are no longer living upon the earth, but in these we find the same gradations in the development of teeth, and we finally arrive at what we may regard as the highest development—man—and teeth of certain characters adapted to his wants. Now, whether in the development of the multiple cuspid teeth from the single cusp these teeth have fused together to form multiple cuspid teeth, or whether the conical tooth has developed cusps upon its peripheral parts that have developed more and more in the upward progress until we have the cubical teeth

of man, or whether by fusion of the conical teeth, I think we have no very certain data. It does seem to me in looking over this subject and examining the teeth of the different animals and of the different fossils, that it is more probable we have had developed cusps first upon the sides of the teeth, then developing more and more until they have given us the quadrilateral tooth of the present, than the fusing together of the conical teeth for the formation of cusps. During this process the number of teeth has been reduced continuously from the great number found in some fishes to the few that are found in man and the higher animals.

In the study of teeth there are some very curious features. For instance, I may allude to the canine tooth, and speak of it as the fighting tooth. Here is a tooth that has wonderfully changed in the different animals, and yet it is always a conical tooth. It has changed as to its size, its position in some degree, though not greatly, sometimes being very large and long, sometimes being very small, and sometimes almost entirely disappearing. There is generally some rudiment of it, and yet it is always a conical tooth or nearly so. This tooth seems to serve many different purposes among the different animals. It is best developed usually in the carnivora, where it is used as a fighting tooth, but not wholly as a fighting tooth. In these animals it is a prehensile tooth, used in seizing and holding prey, as well as a fighting tooth. In man it loses its fighting character completely and subsides, becoming smaller in length of crown. In the wild boar we find this tooth to be strictly a fighting tooth. It is not used in seizing food, it is not used in gathering food, or in the tearing of food, or in the mastication of food; but it is strictly a fighting tooth, so placed that in opening and closing the mouth, the upper and lower teeth rub against each other, so as to continually make them sharp. In this tooth we have a departure also from the conical form, in that it is almost triangular in form, but with no cusps, placed in the mouth so as to be continually whetted sharp by the opening and closing of the mouth; and in order that it may accomodate this wear and not be whetted off short, we find the tooth is a continuous growing tooth. Nature has made it a continuous growing tooth, while the other teeth of the animal are not continuous growing. We see in this tooth how nature adapts the teeth to certain purposes. It is a tooth that is made continuous growing in order that it may be whetted sharp in the process of opening and closing the mouth.

They do not seize the enemy, but by striking the enemy the teeth are brought together and cut like a pair of scissors—with this peculiarity, that the points come together first, the motion of the scissors being the reverse. The points come together first, and they cut like this (illustrating), instead of coming together in this manner, like a pair of scissors. It is a very curious tooth, and yet one that we see so frequently perhaps that we do not think of the curiosity it presents in nature. Tooth history is very interesting. Most of us, if we were presented with the teeth of an animal, would be able to say at once that the animal was carnivorous, herbivorous, or rodent, and we would be able to say with some positiveness something about the habits of the animal, although we may not know to what particular animal they belong. From common observation we learn that.

From a careful study and classification of teeth of animals, we learn much more of the animal and its habits from its teeth. For instance, if we examine the teeth of a dog or cat, we will determine that that animal not only seizes its prey with its cuspid teeth, but it divides the flesh more or less with its molar teeth, and takes its food in rather small masses. If we examine the teeth of the seal, we will find much the same dentition. While the cuspids are not as strongly developed as in the dog or cat, we will find the molars especially are but very feebly developed; hence, we have an animal that does not cut or tear its food in pieces, but swallows it whole. Those teeth that are intended to cut and tear the flesh have not been developed. So we might go through the whole catalogue of teeth and we would be able to determine by a careful study of them the conditions of the animal that used the teeth, not only the conditions of the animal, but the form of the animal, the character of his skin, the character of his limbs, the conditions under which he flourished, and even much of the temperature conditions under which he flourished as well. This question of the formation of the ramus I have not studied carefully, and I will pass it by, with the remark that it is an interesting observation and one undoubtedly of much importance.

Supernumerary teeth is a question that is always with us. They are occurring and recurring continuously, and we generally find that these supernumerary teeth are in the form of the original conical teeth. There are exceptions to that, but pretty generally they are simple conical teeth. I remember that Dr. Dean once

advanced a thought in regard to the supernumerary teeth that we meet with. He had noticed in some of the microscopic specimens that I was preparing whorls of epithelium derived from breaking of the enamel cord of the permanent teeth. They seemed to be enlarged. Not infrequently we found the connective tissue studded with these whorls of epithelial cells from the breaking up of the cord, and his suggestion was that some of these whorls of epithelium have developed another tooth—a supernumerary tooth—and it seems to me highly probable that this is one of the steps by which the supernumerary teeth are formed. Now, whether this should be regarded as merely accidental in its nature cannot be explained. This world of ours does not come by accident. I do not believe these teeth come by accident. Whether this is to be regarded as simply an accident, or whether the impulse of the development of that tooth is a reversion to a former type, you can judge as well as I. I do not think much of this matter of reversion, and yet where these accidents, as we call them, crop out, it does seem that they copy a lower order of things. Go over them as we may, study them as we may, we find many are copies of the lower forms, or of something that has preceded it. Hence man is given to calling them reversions, and in that sense it seems to me correct enough.

I was very much interested in the remarks made in regard to the establishment of a museum. I should like to see a museum in Chicago to which we all could go and study these things. Very much smaller towns about us are better equipped in this regard than Chicago.

In regard to the first molar. I have noticed the type described by Mr. Pearsall many times, and in the technic classes of almost any of the schools we will find these forms not infrequently figured in the books of the students. You will find these forms in their boxes occasionally, the teeth cut, as was shown by Mr. Pearsall, and exhibiting the characters which he described. I do not know how many of them you would find in the boxes of last year's class at our school, or the Chicago school, or other dental schools in the country, but I think he would find some of them in nearly every one; not that the form is so very common, but they are sufficiently frequent, certainly in this country, for most of the classes to gather some of them.

As to the difficulty of extracting the tooth, I do not know that anybody has written about it before, and I think the calling of our

attention to this particular difficulty is well put. I have observed it myself, although I have never written about it. I have observed a good many times that there is a tendency on the part of the forceps to rotate upon the tooth, and I suppose most of you, since your attention has been called to it, will have observed the same difficulty, not only with the first molar, but oftener with the second molar, when the tendency of the distal root to be situated toward the lingual is greater than in the first molar.

Dr. A. B. Freeman: As a general proposition, I believe in the theory of evolution. It is unfortunate that we have no definite knowledge of the origin of the mammalian type of tooth. There is evidence lacking to complete the chain of knowledge we desire, but I believe that this missing evidence will some day be found.

I was pleased with Dr. Bentley's paper on comparative anatomy, and especially when he brought forth the subject of a dental museum. Three weeks since I was visiting an eastern dental school where I graduated, and to my amazement I found a very fine museum. When a student there, some ten or twelve years ago, there was nothing of the kind. But recently, I understand, at quite an expense, they bought a fine collection, which is placed in a room somewhat larger than this. I think it is the best collection I have ever seen in any medical or dental school. There is quite a large collection of crania and of vertebrata. I sincerely hope some interest will be aroused here which will call forth direct effort to gather together such a museum. With reference to the doctor's paper as to shortening up of the body bone, due to the development of the ramus, as I understand his proposition, I think, perhaps, some of you may have forgotten the valuable and interesting paper which was read at the Columbian Dental Congress by Dr. J. M. Whitney, of Honolulu, on the "Ancient Hawaiians." To me this was one of the most important and interesting papers of the congress, and at the same time it opposed quite a number of the theories which have been advanced by members of our profession, and it was along the line of this particular part of Dr. Bentley's paper. I took occasion to read this paper, since reading the one under discussion, and I made a few notes from the paper of Dr. Whitney, which is published in the proceedings of the congress. The ancient Hawaiians were the descendants of the Malay type, and were a pure race prior to Captain Cook's discovery of the islands a hundred years ago, and it had been a pure race back

twelve to sixteen hundred years. The ancient Hawaiians buried their dead in the lava caves, back in the mountains, and more recently, since civilization has been ushered in, they have buried their dead in the sands of the seashore. Dr. Whitney took pains to visit these ancient burial places at a good deal of expense and trouble, and he brought from thence, if I remember correctly, some 650 crania, and the best of these were distributed among one or two museums of the East—the Peabody Museum and the Philadelphia Academy of Natural Sciences. These were all exhibited at the Columbian Dental Congress. The ancient Hawaiians, as far as he can obtain any data, were never subject to typhus, typhoid fever, malaria, scarlet fever, whooping cough, measles, mumps, smallpox, syphilis and leprosy. These diseases were unknown. The most common diseases that affected these people were those of the alimentary canal and lung troubles. Their food was simple, and the climate never varied thirty degrees, the mean temperature being seventy-five. Dr. Whitney, in his examinations of many thousand of these crania, selected the best specimens; and he found that not more than twenty-five per cent of the ancient Hawaiians were exempt from dental caries in all its forms, necrosis of the teeth and bones, erosion, pyorrhœa alveolaris, disease of the antrum, salivary calculus, etc. Next to caries, he states that irregularities of the teeth were the most prevalent of any trouble which he discovered, as prevalent in this ancient race as we find it to-day in our practice at home.

In connection with these statements, and in the discussion of the paper, Dr. C. N. Pierce, of Philadelphia, called attention to the fact that in every one of the specimens which Dr. Whitney exhibited where irregularities were present there was a broad arch. The body bone was roomy, a condition which favors typical eruptions. In addition to this, the third molar was absent as frequently as we find it to-day in our practice. Now, it seems to me that these people would be classed among the microdonts. I believe Dr. Bentley classed the Malay people and their descendants as among the macrodonts. If there are twenty-five per cent of irregularities in that old, pure race, dating back at least twelve hundred years, and as many cases of the absence of the third molar as we have in our practice to-day, and especially with the brain well developed and the body bone well developed, it would seem that Dr. Bentley's theory is not well taken in regard to the

cause of irregularities. We have anomalies of development in other portions of the human economy. A student who is familiar with dissections, who has been present in a dissecting room throughout a winter course, must have seen anomalies in the distribution of the circulation. Very frequently this is seen. In certain (dermoid) tumors there is the development of hair, teeth and nails in parts of the body far remote from the mouth. Is it any more wonderful that we have these anomalies in the mouth? I do not wish to antagonize the theory of reversion of type, but anomalies are so frequently found in the human economy that it does not seem strange or curious. It would seem to be an ordinary physiological process. I do not know that I have any further remarks to make at this time.

Dr. E. S. Talbot: Dr. Bentley asked me to attend the meeting this evening and criticise his paper; but after having heard it, I see very little, if anything, to criticise. I agree with the theories he has advanced from the beginning to the end. My studies, however, have led me to take up this subject quite extensively, the results of which are very interesting to me. Just as a man would commence at the top of a column of figures and add downward to verify his results, I should commence in the same manner to verify the points already made by Dr. Bentley.

The two theories that have been advanced and accepted by scientists are the concrescence and differentiation theory. The concrescence theory was advanced by Magitot in 1877, and it consisted of a cone-shaped tooth, as explained by the essayist. The concrescence theory is the one in which the cone-shaped tooth is primitive, and the bicuspids and molars developed by a budding upon the sides of the tooth. The differentiation theory, advanced by Cope, of Philadelphia, and Osborne, of Columbia College, is where two or four primitive teeth come together and form a bicuspid or molar.

Dr. Black has explained how these theories have been advanced, in the order of evolution, therefore I will not take up the time by commencing with those teeth found in the lower strata some forty or forty-five feet below the earth's surface in North Carolina, but with the fall or the degeneracy of man, and show how both these theories are correct. These two theories were investigated thoroughly by a noted German scientist (whose name I have forgotten) and found correct. My investigations have shown the

same thing. In order, therefore, that we may better understand what I have to say about the degenerate jaws and teeth, we must take up the subject of evolution. Cope, in the study of man, makes the point that the ape and the human child at birth are very near alike. If the heads only are exposed, at birth, it is difficult to tell the difference between the ape and the human infant, and he also shows that if the jaws, the alveolar process, lips, mouths, eyes, etc., are taken there is very little difference. In other words, the nearest point, from a scientific standpoint, that the ape and man resemble is at birth. At birth the jaws of man become arrested; in the ape they develop. The brain in the ape becomes arrested; in man it develops. Man is of a higher type than the ape or the lower form of animal life, on account of brain development, and as the brain develops the jaws cease. This point has been noticed in the study of man from the beginning to the present time. An illustration of race development of the jaws within our own period is the negro. The pure negro comes nearest to the ape form of any human being. But go to-day and visit the restaurants in the city of Chicago, and I venture to say that you will not find a single negro with excessive development of the jaws. This evolution has been rapidly going on among certain races. The negro is supposed to be a long-headed race; that he has a brachycephalic head. You cannot find one in Chicago today, if Professor Flower's method of measuring the head is taken, and this shows the rapid change that is taking place in the human race of excessive development of the head and the recession of the jaws. Taking a perpendicular line, the early negro race had protruding jaws. Drawing a perpendicular line at the anterior lobe of the brain, the brain has developed forward and the jaws have receded. Standing on a corner of Piccadilly Circus and Regent Street, London, I made an examination of ten thousand people walking along the street, and found that eighty-three per cent of these had recession of the jaws inside of the perpendicular line. Examining three thousand school children under ten years of age, ninety-three per cent of them had recession of the jaws—ten per cent greater than adults—showing the wonderful recession which is taking place in the human jaw in one generation. At the corner of Adams and State Streets, Chicago, in a mixed population, at least seventy per cent of the people had receded jaws, or the jaws were arrested in their development inside

of the perpendicular line. Some years ago I examined a large number of skulls of ancient Romans and Britons, as well as the skulls of the same class of people to-day, such as the Roman soldiers at Rome and the English soldiers in London and Dublin, and I found a difference of from one-half inch to three-quarters of an inch in the diameter of the jaws, with a recession of the jaws of over one-half an inch. So in two ways it is proven that the jaws are continually growing smaller. Where the jaws measured two inches and a half a thousand years ago, to-day they only measure from two inches to an inch and three-quarters.

The laws of heredity, atavism and evolution are just as fixed as any of the universe. It only remains to find out how those laws work. Heredity is that law whereby a child resembles its parents. Atavism is that law whereby a child resembles its grandparents, or many generations removed. There is another condition which might be called atavism, in which the child is born to parents whose nervous systems are tired out, due to excesses. It may be due to excessive use of tobacco, whisky, social excesses, sexual intercourse, etc. The parents look well and healthy, but the child is born with a clubfoot, malposition of the hands, or possibly without arms. Here is a case of atavism the reverse of the case to which Dr. Bentley has alluded.

Man arrived at his highest physical development when he had thirty-two teeth. If he has more than thirty-two teeth it is atavism; if he has less it is degeneracy.

There are two certain organs of the body continually degenerating, the jaws one, the appendix, the other. The great theory advanced by dentist was that by eating coarse food the jaws expanded. But the jaws are growing smaller continually and all we can do will not stop them. As Dr. Black has said—and I read an article two years ago upon the subject—when we have supernumerary or deformed natural teeth they take one of two forms, that of the normal tooth or a single cone. When a deformed molar tooth is found, it is always cone-shaped and if there are three or four extra teeth in a group they will be found to be either cone-shaped or the form of the normal teeth. The result of this is that the supernumerary teeth are found either in the anterior or posterior part of the mouth. Occasionally one is found in the center, that is, near the bicuspid or molars, but usually they are found in the anterior or posterior parts, thus showing a shortening of the primitive jaw.

The people born of tired out parents (parents whose nervous systems are unstable), are the ones who show these peculiar forms of atavism and reversion to the carnivora and other forms of animal life. Whenever two or three teeth are found growing together, they will be seen budding out and will be found in the above class of patients. They are badly formed, badly built. You might say that it is heredity, but it is not so. The parents may be perfectly healthy and well, but their nervous systems are exhausted and the result of this condition may be followed by clubfoot, cleft palate, deformed teeth, or insanity. These conditions are more liable to be found in individuals or in structures that are passing away—structures that are unstable—and therefore decayed teeth are found more frequently in idiots and in insane people than in normal individuals. It is because the structures are not well formed. My studies would lead me to believe that these peculiar forms of the crowns of the teeth alluded to by Mr. Pearsall are due to a want of room in the jaw for their development. They are formed in the same way when two or three teeth come together, but for want of room are pressed out of shape. Mr. Pearsall asks if they are not more common in his country (Ireland) than here, or in other words, are they as frequently seen in this country as in Ireland? I should say no. I find them more common in England and Ireland for the reason that there are more degenerates; there are more deformed people in England and Ireland than in this country. The condition I have spoken of is due to want of room, consequently the teeth are deformed while the crowns are forming.

There are two other forms of atavism, the V-shaped and the saddle-shaped arches, the V-shaped reverting to the reptilian type and the saddle-shaped to the carnivora. I shall at the next meeting of the Odontographic Society of Chicago, show how these forms take place. Both are atavistic in form and cannot take any other shape, except the modifications that are due to local conditions. In a summary of the degeneration of the jaws and teeth, the tendency is for these structures to revert to the simpler forms of atavism.

Dr. C. F. Hartt: I think Dr. Freeman mentioned the finding of teeth in ovarian or dermoid tumors. About ten years ago, when I was connected with the museum of the Chicago Dental College, I had an opportunity of seeing many pathological specimens. I was fortunate enough to secure some teeth taken from an ovarian

tumor. The tumor contained 350 teeth and quite a quantity of hair. Dr. Beebe, who kindly examined the specimens, gave me eight or ten teeth. Out of the 350 teeth they were nearly all bicuspids and very well formed. I secured a dozen or more of them, and they can now be seen at the college museum. The case was a very interesting one.

Dr. GEORGE B. PERRY: I do not rise to discuss the papers, but I know there are a great many members of the profession who are interested in the formation of a museum for the purpose of furthering scientific research and investigation. I think Mr. Pearsall has something interesting to say on the formation of such a museum, and he is willing to assist us. I am sure the society would be glad to hear from him.

Mr. PEARSALL: The question of a museum is a very large one. I believe we ought to have one. I must confess that when I came to America in 1895 and found there was no dental museums I was surprised. I am anxious to know the name of the museum mentioned by one of the previous speakers to-night and where it is located. I have studied the museum question for many years; I have done some practical work in connection therewith, and I would be glad to assist any body of dentists in this city toward forming a museum, because some preliminary work will have to be done in that direction.

In forming a museum two ideas present themselves; one a typical teaching museum for the schools, in which specimens can be duplicated by casts and other models, and a central museum where practitioners may go to study. I am inclined to think, so far as schools are concerned, that you can get up a large collection of specimens. I think there should be some central place for the museum where material from enthusiastic men can be put together, placed under the care of a scientific curator. I have no doubt that a great many things which trouble us now and which we are unable to investigate, would become clear. If any of you visit the Natural History Museum, in South Kensington, you will see the beautiful way in which specimens are mounted and kept. I think a deliberate collection of specimens pertaining to dentistry, putting them together and mounting them, would get rid of much of the guesswork which obtains at the present time. We would be certain about it. There is a fine collection of specimens gathered together in London which belongs to the Odontological

Society of Great Britain, but it is comparatively useless to the profession. Any one like myself, who is seriously engaged in studying abnormal teeth, finds himself at a great disadvantage, because he has no means of determining the accuracy of his observations from independent study, unless he is permitted to examine such material. I am not a member of the Odontological Society, and therefore cannot obtain access to this museum to the extent I would were I a member. The Hunterian Museum, in London, under the charge of Professor Stewart, is largely one for students, and one can have access to the specimens there. Of course, if he damages things and behaves badly, he will be turned out. If he is careful with the material he will get opportunities for photographing and examining such specimens as he likes.

I have collected quite a number of things, and if time permitted, or if I had them here, I could show them to you. They would disprove many of the statements made by Dr. Talbot. I am inclined to think that Dr. Talbot pins his observations more to casts than to actual anatomical specimens, and in that way I am trying to correct wrong impressions by showing the abnormal conditions in anatomical specimens by photographing them. I have slowly acquired a small number of photographs of conditions that are comparatively rare. I have no doubt if others turned their attention to the same sort of work, we would in time get together a lot of valuable material which would be of great interest to us. I think the formation of museums is settled, but I believe the methods of displaying and mounting specimens should be thoroughly gone into, so that there shall not be three or four methods. The museum question is a very important one. There should be a permanent location for it. The work of establishing one should be constantly and steadily kept up. I suppose a really good museum is never completed; but certainly an immense amount of information can be got together by the combined efforts of the profession.

The Hunterian Museum contains a number of very valuable specimens. I showed Sir John Tomes specimens that he had never seen before, which I had photographed in that museum. One day I spent six hours there in examining skulls, taking cognizance of those that presented abnormal teeth or malformations. If this was thoroughly done a good many things that are vaguely dealt with in our text-books would be more clearly fixed in our minds. The ridic-

ulous terms given to dental arches might be put in the form of a diagram or diagrams, so as to get rid of what I consider a hideous nomenclature, such as V-shaped arch, saddle-shaped arch, broken arch, etc. Instead of calling it by name why not give it a figure or diagram?

Another thing: We might find it very advantageous to keep in touch with naturalists, zoölogists and biologists. It would be better, as far as possible, for us to follow in the line of such men as Darwin, Huxley and other great men. This is the wiser thing for us to do.

But the museum question is to me an interesting one, and I certainly have what I consider valuable material on hand, and I would be delighted to send copies of my casts or specimens of any cases. If this is done, it will give you a good start in forming a dental museum, and then there will be no difficulty in filling in gaps.

Dr. BENTLEY (closing the discussion): I will not detain you but a few minutes. I will not go into the details of the discussion. The practical claims made in my paper have not been set aside. A question has arisen in the mind of Dr. Freeman as to the microdont race referred to in my paper. Prof. Flower is authority for the statement made regarding them. In considering the question of evolution we must take into account the element of time. The race spoken of by Dr. Whitney at the Columbian Dental Congress is a pure-blooded race as far as we know, but in the element of time they are a comparatively civilized race. We must not consider in this theory one or two, or even a thousand years. A degenerate race does not belong to what we call the upper civilized race. Races are divided into the savage, barbarian and civilized races. The people Dr. Whitney describes belong to the upper barbaric, if not the lower stratum of civilized races.

I would like to talk about the canine tooth, but it is unnecessary at this time. But there is one thing I do want to emphasize as the logical result of this paper, if it amounts to nothing else, and I wish I could put it as clearly and as strongly as Mr. Pearsall namely, the necessity of having in our midst a museum to which all of us can go and study the effect of comparative dental anatomy upon the crania and teeth and lower animals as compared to man. Such a museum should not be the possession of any one particular dental school, but it should have at its head a scientific curator—a man capable of classifying the material. In hunting the literature

pon this subject for this particular paper, I will say to you that here is not a dentist in this or any other country who has arisen o the dignity of an authority on this subject. Naturalists, zoölo-ists and others have given us the great fund of material, and it is ncumbent upon us, if we want to dignify our profession and make reach the point which we claim for it, to do some of this work urselves. We cannot do it other than along the line of original vestigation, and it cannot be done unless we have the material o investigate. I urge upon you to make an effort to establish a iuseum, if only in a primitive way, or make it a nucleus for a good ne in the years to come, and then this boasted city of western vilization will have a museum worthy of the name.

Mr. Pearsall: In his remarks Dr. Talbot touched upon the ompression theory in the causation of abnormalities of the teeth nd jaws. I do not think, as a rule, we are apt to associate pres-ure with the formation of the jaws of an infant. It is accepted, think, all over the world that deciduous dentition is pretty per-ect. There are well-marked arches and curves, and it is quite a rity to find abnormalities among the deciduous teeth. When I rst took up my investigations along this and similar lines, Tomes old me that I would find abnormalities of the crowns of teeth; iat these teeth would have an extra cusp. I have gone over ese teeth many times, but I find the form of the crown is almost bsolutely normal, there being a little accentuation, perhaps. When we come to the roots, they are different. I am the first, I elieve, to draw attention to the fact that this abnormality in the ermanent teeth is also seen in the deciduous teeth. If you will xamine the specimens I have passed around to-night, you will be onvinced that the pressure theory of Dr. Talbot remains to be roved.

I am much obliged to you for the courtesy and friendly greet-ig you have given me to-night. I assure you it is a source of reat pride to be present among so many distinguished men.

A regular meeting was held in the Stewart Building, Tuesday, December 6, 1898, the President, Dr. J. E. Hinkins, in the chair.

Dr. W. V. B. Ames read a paper on "Inlays and Cements."

The discussion on the paper was opened by Dr. G. W. Schwartz.

Dr. SCHWARTZ: I see no reason why I should have been asked to open this discussion other than from the fact that I have been known to have done some porcelain inlay work. I would say that this inlay work described by Dr. Ames is not exactly the same line of work as porcelain work, and for that reason I am not supposed to know a great deal about it. All that I do know about it I have practically learned from Dr. Ames during the last year and a half.

We are indebted to Dr. Ames for this unique process of making inlays, as he terms them, and here I wish to differ from Dr. Ames in this much, that I do not consider a piece of work represented with the contour there as strictly inlay work; I consider that restoration. Of course, that is more a technicality than anything else, but anything that is inlaid has the walls around it, the other I should consider restoration work.

In making porcelain work for a piece like that, I do not consider it practical, but with this gold restoration work, I can readily see why it would be more practical. The method of construction makes it easier to do it. It is almost impossible to get platinum burnished into a cavity of that kind, and get an inlay or restoration made of porcelain that will do anything to compare with what a properly fitted filling will, so I would ordinarily rather have a well made cement filling than one of porcelain for such a case. But as to the gold inlay, as Dr. Ames makes it, I have seen some of his work and know from his past experience that it is just what he claims for it.

He spoke about not depending on any proper seatings at the the cervical margin. Now, in that event, if this tooth should decay here (indicating), for instance, he has put on a distal restoration here; now he has a mesial decay next; in the event that he wants to put in another restoration, he must remove the distal one, as I understand it, in order to seat the mesial one. Now if he had a properly seated filling made of foil, he would not have to do that; he would prepare his cavity in the usual way, and then he would take out this part of it, and attach this new filling well to

his part of the old filling (indicating), so there is one disadvantage n this kind of a piece of work that he has described here.

Naturally the greatest trouble and the greatest argument gainst inlay has been the cement. In my experience for the past ix years in porcelain inlay work that has not bothered me much. have seldom seen any of the work that was done properly and roperly cemented in, in which you could pick a flaw, because if it s properly done, and the margin properly gotten, you will have ery little trouble from the cement dissolving out from an inlay, othing to compare with ordinary cement work done as fillings, nd for a person to say that an inlay will only last as long as a ement filling, that person is entirely mistaken.

I do not know anything about cement, and I am not ashamed o say it, for this reason: I do not think many dentists do, and he manufacturers of cements often know just as little and sometimes less than the dentists; and when we have cements put on the narkets by reputable houses, as we have them, of such poor uality and absolutely worthless as a rule to fill teeth with and do hat they claim for it—men that should know how to make it—I o not see how the user of it, who is a practical man and not a cientific man in that line, should be held responsible because he oes not know much about the cements. I was very fortunate hen I began to use cements, because I got hold of Justi's, and I elieve it is good for the line of work I wanted it for, and for the ast two years I have used Ames' cements, and I have used various inds, and they have their uses, and I like Ames' cements. I do ot wish to boost Ames' cements because he read the paper, but ut of justice to him. When I began to fill teeth with cements I tarted out by using Caulk's, and I thought it was about the poorest ement I used; afterward I had a good use for Caulk's cement. bout fifteen or eighteen years ago my preceptor sealed everything p with cotton and sandarac, and I did not like odor of sandarac nd cotton, and I found a good use for Caulk's cement, because I ould run a bur right through it easily after it had set, and so I sed it for dressing seal, and I found that was the only use I could ut it to. Of recent years I have used dressing seal instead. I ave advanced still farther, but for filling material I use the Ames' ement, and if we are going to speak about porcelain inlays I ould say other things about cement, but as the subject is strictly old inlay and restoration I will not do so, but leave it to Dr. Vedelstaedt, who is with us and will tell us all about it.

Dr. W. T. Reeves: I shall have to say, as Dr. Schwartz did, that the paper deals mainly with gold inlays or restoration, and that is a class of work I have never done. My work has been entirely in the line of porcelain inlays.

I think that the doctor's work deserves a great deal of commendation, and has its place in the cases that he cites; and the only criticism that I would make is that some work done in porcelain would look a little more sightly in most patients. In young girls from fifteen to twenty years of age the average gold fillings would not stand, or they would be apt to fail and extensive decay occur under them. I think that an inlay does much better service, particularly porcelain inlay, for the reason that you have all the advantages that you would have of entire cement filling and one that will last just as long as the average gold filling.

There is one feature in making inlay that the essayist spoke of, but did not emphasize particularly, that I would like to emphasize, and that is the comfort of the patient. They are not subjected to the tedious, long operation of the work of a gold filling; the work can be stopped at any stage; when the patient is tired you can stop the work and take it up again at another time, which is entirely satisfactory to the patient. If you continue until the work is completed, which on the average takes no longer than the making of the gold filling for the same sized cavity, they are at rest most of the time, as the majority of the work is being done in the laboratory, coming occasionally to the chair for reburnishing or fitting into the cavity, and then, when it is ready to put into place, simply adjust the rubber dam and set the inlay and wait a reasonable time for the cement to harden.

There are one or two classes of inlaid porcelain fillings that I do not know that it would be out of place to speak of. I think that I may make a drawing. (The speaker here drew a sketch on the blackboard.) Take a corner of a central that is decayed and needs to be restored to that extent. I have a good many such cases that are proving successful; the cavity needs no deepening, as would be necessary for a gold filling. I cut a fairly firm seat at the cervical margin, at the cutting edge, simply cut in a little pit there; then I take a metal pin and bake into the porcelain inlay; let this be the porcelain inlay; that is all the retention I find that such an inlay requires for holding. I very seldom had one that loosened. I do not remember now any that have loosened and broken out.

In a bicuspid, take this drawing here, and if the fissure has not been filled with a gold filling, I would fill that fissure with a gold filling, and then cut the cavity so as to leave a rounded surface there, which makes it very easy for burnishing the platinum into place.

In regard to cements, I was in hopes that the essayist would speak of his oxyphosphate of copper cement and black cement. That I do not think is in general use, but one that I want to speak of as being particularly serviceable in certain classes of cases, especially among children. I find that I can barely cut out the grooves and fissures and have no deepening for retention in any way, and that the oxyphosphate of copper cement will hold there. Some that I put in four years ago I had occasion to refill within the last two months, and I found that underneath these fillings that the dentine was as hard and polished and the teeth in better condition than I had any hopes of being the case. What little decay or softening there might have been had become very hard and very dense, and I refilled those with very little additional cutting, and undoubtedly they will continue to do just as well as previous fillings of that kind would have done.

Dr. I. A. Freeman: What little I know about inlays can be expressed in a very few words. I have used inlays somewhat in my practice, but largely, or almost altogether, it has been in the way of porcelain inlays and almost altogether in the anterior teeth, although in some instances I have used them in the posterior teeth.

Now in respect to the question of inlays, I regard the inlay as being dependent upon the same principles that govern in the strength of a chain. The weak part of the chain tests its strength; so in the inlay set with cement, the cement is its weak part or portion; the porcelain inlay or gold inlay itself will not be destroyed.

That all cements are to some degree dissolved in the secretions peculiar to the oral cavity, we know. That no cement has been yet presented to the profession that will not to a large degree become dissolved by the secretions of the mouth is certain, therefore the endurance of the inlays is dependent upon the cement.

As regards the porcelain inlay, the history I believe is that Dr. Maynard, of Washington, was the author of the porcelain inlay, which he had to secure in position by filling the space between the inlay and the wall of the cavity with cohesive gold; many of you have seen that work. But it did not come into very general use,

or has not, in that way. It was a difficult thing to do and only in a sense did it do away with the use of gold. Now the porcelain inlay has its place as well as the gold inlay. I have seen some beautiful examples of the gold inlay that has been in service for some considerable time, and I also have seen porcelain inlays made elsewhere than in this city that were doing efficient service. However, unless we can obtain a cement that will endure in the secretions in which it is bathed, we will have failures. We have failures in large proximal gold fillings, and it should not always be said, it seems to me, of an inlay that fails, that it is because of a want of good judgment or proper manipulation that it does fail. In many instances we know that the inlay does remarkably well; and in the hands of so expert an operator as our essayist, doubtless, it will serve a very great purpose in these large contours, usually by the cohesive gold treatment. Now in the anterior teeth porcelain may be used as inlay to avoid the very large and unsightly gold exhibition, and I wish the profession would at some time soon place themselves on record as regards the many wild schemes that have been inaugurated within these last few years to display gold. How many teeth have been cut down and crowned, (this may be a little out of the line of the paper) but how much better it would be, instead of placing a gold crown upon a frail tooth (and I have seen them placed in some of our best offices) where an inlay of porcelain or a porcelain tooth could have been placed and the tooth preserved in its more nearly normal appearance. I have seen gold crowns placed in the anterior part of the mouth, lateral, central and cuspids. Now is this right? It seems to me the profession should have a voice, and it should be heard. It should not be so.

As regards the use of cement in the mouth, I believe this paper covers the question of cements as well as inlays; if the cement will retain the gold inlay or the porcelain inlay in position, then why not use cement as an inlay? Why should we use any other material? It can be colored to match the color of surrounding tissues much better than any other material, and if the cement is able to retain the structure of gold or porcelain in position, why not use the cement as an inlay entire? Then again comes up the question, why use inlays at all? It has been mentioned here that the inlay takes the place of the time wasting and physically exhausting operations that are incident to treating the case with cohesive gold. There are other reasons. One reason I would

urge is the risk run in the production of large contour gold fillings, of the destruction of the teeth. I have not seen it in late years so much, because I have become perhaps more gentle in the treatment of these cases. I expect possibly it may be that, but I used to see a great deal of pericementitis arising from long and severe operations which in some instances resulted in the death of the peridental membrane. The teeth would then become a foreign substance and would soon loosen and become lost. Now if we use the inlay, it will no doubt prevent this.

I wish to acknowledge my indebtedness to Dr. Ames in his efforts in producing a cement that will endure the service to which it is subjected; and to-night he has given us a sort of résumé of his work for a number of years past, and it seems to me the suggestions he has made here are of great value in regard to the manipulation of the cement, the proper mixing and the employment of the proper implements for mixing and preparing it for the place where we wish to use it. I have no doubt from experience that a great many of the troubles that arise from cement failure are because of the improper mixing, improper implements, improper care, improper amount of liquid perhaps placed upon the slab and at an improper time. I have found in my own experience cements from the same package, used to the best of my judgment, have proved almost valueless. For instance, there are some things that arise in practice. In the setting of a bridge, we find one abutment is firm after a service of a year or so, and the cement in the other abutment entirely washed away and gone. I see I am taking too much time. I thank you for your kind attention.

Dr. E. K. Wedelstaedt, St. Paul: It is good to be with good people, and it affords me great pleasure to meet with you. I desire to compliment the essayist, also to thank him for his paper. There are, however, one or two things to which I would like to call your attention. These do not relate to inlays in themselves, for really I never made a gold inlay in my life, so, therefore, am not in a position to discuss them, but to principles of cavity preparation. Here is one of them: He says, "In a large majority of cases I get along without paying any attention to the seating of the filling, as this is accomplished for the use of foil, since the anchorage and the seating of it might be so called—it is generally effected by extensions of the inlay in some way on the occlusal surface." Stress, or the force of mastication, the occlusion of the teeth, etc., are go-

ing to affect any inlay in a proximal cavity precisely as it is going to affect a filling made with foil, with perhaps this difference; there is a trifle more spring in the 22 k. gold than in the 24 k. I should therefore say for this reason alone provision should be made for a broad, flat seat. There is a danger in having a thin veneer of material at the gingiva to which the attention of the profession has never been called (in fact, I discovered it myself only within the past month), and that is the liability of penetration of moisture into the cement in which the inlay is anchored. I say there is a liability; I cannot speak of this as a fact, for I have not made any experiments in regard to this particular line of work. I do know, however, that when thin veneer amalgam fillings are made and anchored into cement in the cavities of green teeth, these afterward being subjected to an aqueous bath which has a trace of aniline in it, and then subjected to a temperature of 98° F. for twenty-four, forty-eight or seventy-two hours, the thin veneer fillings show much more penetration of the aniline into the cement than do those which have broad flat seats. This being the case with one filling material over cement does not prove by any means that it will be so with all, but would be well for those interested in this kind of work to make an experiment and note what difference, if any, exists. I feel very certain that those making this experiment will find they will have much better success where a broad, flat seat is made in the tooth for the inlay to rest on; and the inlay, also, ought to have, I feel, this broad, flat seat. I have observed for a number of years past, where thin veneer fillings of gold or amalgam had been placed on cement in cavities in human teeth, that there was more or less penetration of the fluids of the mouth into the cement. Had there been less cement used and a little more room given the operator in which to work his metal filling, I do not think this condition of affairs would have existed. On the other hand, I desire to speak of a case that occurred in my practice a short time ago. A young man lived in Paris for several years and had some teeth filled by an American dentist who lives in that city. The tooth was an upper left molar and had quite a large disto-occlusal amalgam filling in it. He said he was annoyed considerably by the tooth, and desired to know what the matter was. The teeth had not been separated prior to filling, nor had the filling been contoured; and it was very difficult matter to get any exploring point between the teeth at the gingival

margin. I decided that this filling had to come out. I took a drill and cut the filling on the occlusal surface, linguo-buccally, just back of where I supposed the step began. Gentlemen, you can imagine my surprise when I tell you that the moment the proximal part of the filling was separated from the occlusal portion of the filling it disappeared gingivally into the cavity of decay that there was below the gingival portion of the filling. I cite this case purposely to show what occlusal anchorages may do. Here was a young man who had not had his teeth examined in seven years, and the majority of us know that three years after that cavity was filled there was a cavity of decay around the gingival margin. This continued to increase in size until it was so large that part of the amalgam filling disappeared into it. I like to help so good a man as Dr. Ames out, although I do not think he needs any support from me, and give occlusal anchorages all the credit that they deserve; but I feel that a good seat at the gingiva is at all times necessary and always goes hand in hand with an occlusal anchorage in all proximal cavities. While on this subject I would like to say that I do not know when I have been so greatly pleased as when I heard Dr. Ames speak of incisal anchorages where the angle had been removed. This is a step in the right direction, and it is what I have been contending for for some time. It is applicable to fillings as well as inlays.

I feel that the difference between mesial and distal cavities in molars is so great that separate rules should govern the cutting of cavities for inlays. The same rules for cavity preparation must necessarily govern us, whether we are going to make inlay fillings or some other kind.

Personally, I disagree with what the essayist says in regard to it not being necessary to separate teeth for proximal inlays. If we take a handful of extracted teeth and examine their proximal surfaces, we will notice the facets worn at the contact points. The portion of the tooth that is worn away at the contact should, I feel, always be rebuilt, for the reason that we get better results in the end.

There is a great deal of merit in this method of restoring some teeth that have large cavities in them, and I agree with Dr. Ames when he says that we shall hear more of this in the future than we have heard in the past. Not many of us, however, can hope to attain that degree of skill that Dr. Ames has.

And now about cements. I had little idea when I began last

June to make experimental fillings with the cements what there was before me or, I can promise you, gentlemen, this work would have ended right then and there. The more fillings I made the more fields were opened, and along in September I stopped practicing dentistry, went into my laboratory and stayed there until the 10th of November; not the entire time, but about ten hours each day. I did here and there see a patient, but practically all my time was given up to this cement investigation. I think I have never been so fascinated with any work as I have been with this investigation, and I think I tell the truth when I say that I know less about this cement question now than I *thought* I knew last May. I am simply honest when I stand here and tell you that I know absolutely nothing about it. To be sure, much has been discovered. Some of the new things are not new at all. They are what we have known for many years; at least what we have felt was so, but we needed proof that they were so. That proof we now have. We now know positively that the majority of oxyphosphates of zinc that are sold us at the dental depots are penetrated by the fluids of the mouth when fillings are made of them. Almost every one of the twenty-five different samples of the oxyphosphates of zinc of which I have made experimental fillings, when subjected to an aqueous bath that has a trace of aniline in it, either at ordinary room temperature or at 98° F., shows more or less penetration of the aniline at the end of twenty-four, forty-eight or seventy-two hours. Teeth filled with cement by different principles of manipulation and different methods of instrumentation also show this condition of affairs. Gold crowns fitted to freshly extracted teeth, when cemented to the teeth and placed in the bath for different periods of time, show, on their removal, how the moisture had penetrated them. I had the crowns made for these teeth by Dr. Ridout, a man of unusual skill; and he made crowns that were seamless, and that fitted the teeth as perfectly as human ingenuity could make them fit. A good many combination fillings of cement and amalgam were made and tested. When these fillings were removed, or the teeth broken in a vise, they showed clearly traces of aniline in many directions. In some cases the aniline could be traced clear around the axial wall. Now, these experiments have not been made with all the different makes of oxyphosphate of zinc, but experimental fillings have been made with a good many, and nearly all have shown more or less

penetration of the aniline when subjected to an aqueous bath. Now, there is an idea prevalent that if certain principles of manipulation are used with some cements, moisture will not penetrate them. There is also another idea, and that is, if certain methods of instrumentation are strictly followed, this will prevent the influx of moisture. I have ideas of my own in regard to this, and will zealously keep them to myself, and will follow the advice of Dr. Truman and give you the results. Then you can judge for yourselves. A waterproof cement is waterproof. Moisture will not penetrate it, and it does not make any difference what principles of manipulation are used in mixing the cement, nor what methods of instrumentation are used in packing it, it is waterproof always. It will not be affected in the least by moisture. It is waterproof first, last and all the time. A cement that is nonwaterproof is affected by different principles of manipulation and methods of instrumentation; and it is an impossibility to make a waterproof cement out of a nonwaterproof one, no matter how the cement is mixed or packed. It is always nonwaterproof. Moisture will penetrate the fillings when subjected to a bath at room temperature or 98° F. for different lengths of time. Since I discovered this, I have made perhaps 500 experimental fillings to prove it was not so, but the results are always the same. Why this is so, where the fault lies, whether in the cement or in the investigator, is not for me to say. Here are the results. Do with them what you think best.

The strength of cement, i. e., the ability of the experimental fillings to withstand more or less stress before they will crush, is always affected by the different principles of manipulation, and more often than not by the method of packing the cement into the cavities. But the ability of a cement filling to withstand the penetration of moisture is one thing and the ability of a cement filling to withstand 350 pounds of stress before it will crush is something else: and these are two things that I trust you will get perfectly clear in your minds. A cement filling may be waterproof and yet not carry ten pounds pressure before going to pieces when placed in the dynamometer. On the other hand, I have had cement fillings (tested dry) that would carry 370 pounds before crushing, whose mates showed the moisture had penetrated from the circumference to center, and all these fillings were made from the same mass of cement and were made mechanically. Here you have the two extremes. These are results, not ideas, and I have

obtained them time and again, and any of you gentlemen who are willing to experiment can also obtain them.

A request has come to me asking if I would not speak on the influence moisture has on cement fillings, that is, the experimental fillings. This relates to what the differences are between cement fillings tested dry and those tested that have been in moisture at 98° F. for different periods of time. I am very unwilling at this time to do this. A year from now, if you desire, I will very gladly come to you and take up this subject again, but I cannot do so now. I will, however, give you the results of one comparative experiment, and then you can judge for yourselves. I desire to say that these wet cement fillings gave the highest crushing results of any I have so far tested. I would like to call your attention also to one very singular thing: The dry fillings have frequently carried 100, 125, and, in some cases, more pounds pressure before they would crush, and the wet ones, made from the same mass and by the same methods, with the same instrument, would very frequently crush when ten pounds pressure was placed on them, and very seldom carry more than thirty-five pounds before they would crush. This particular comparative experiment, therefore, is of more than ordinary interest to us. The residue cement is what was left after making the fillings. It was rolled into half a dozen small balls about the size of the experimental fillings, which are 2½x3½ millimeters. The only thing I can say is, that these results are most astonishing to me.*

I will write the comparative test, Experiment No. 174, on the blackboard, so that you can all see it: Made November 16, 1898, 5:15 P. M. Mix four times. Not rolled. Method, flat burnisher; force. Twelve fillings; six in box, dry, six in bottle, 98° F. Tested. Fillings dry; twenty-four hours, 183 pounds; forty-eight hours, 120 pounds; seventy-two hours, 200 pounds. Residue dry; twenty-four hours, 35 pounds; forty-eight hours, 42 pounds; seventy-two hours, 42 pounds. Fillings wet; twenty-four hours, 118 pounds; forty-eight hours, 65 pounds; seventy-two hours, 80 pounds. Residue

*All fillings made as nearly alike as possible.

Made in steel molds, oiled with alboline, to prevent the phosphoric acid from affecting the steel.

All of the fillings were washed in alcohol and ether, to remove the alboline, after having allowed ten or fifteen minutes for setting.

Dry fillings were then allowed to dry. Wet fillings were then placed in water at 98° F.

wet; twenty-four hours, 35 pounds; forty-eight hours, 30 pounds; seventy-two hours, 20 pounds.

I desire to acknowledge my indebtedness to Drs. Black, C. N. Johnson and Ames for their suggestions and assistance in this work, and I desire also to thank you for your attention.

Dr. WEDELSTAEDT: You wish me to explain this? (Referring to table on blackboard.) This comparative experiment was made the 16th day of November, 1898. "Mix four times, fifteen seconds each." What is meant by that is this: This fluid is placed on the slab beside the powder. Some of the powder is now just incorporated with the fluid, then it is mixed thoroughly for fifteen seconds. Then some more powder is mixed for fifteen seconds to that portion already mixed. This is continued until the powder has been added to the fluid four times in all. Powder has, therefore, been incorporated with the fluid for just one minute. As a rule all the oxyphosphates that are mixed by this method are very stiff by the time the fourth portion of powder has been mixed. This cement was not rolled after it was mixed. Method, flat burnisher. An ordinary flat burnisher was used to pack the cement into the cavities. The amount of force exerted on the burnisher to pack the cement was about twenty pounds. Twelve fillings were made from one mass of cement. Six fillings were placed in a box to dry, and six were placed in a bottle of water. This was placed in the boiler at a temperature of 98° F. Twenty-four hours after the fillings were made a dry filling and a dry piece of residue were crushed in the dynamometer. The filling carried 183 pounds and the residue 35 pounds. One filling and a piece of residue were also taken from the bottle. The filling carried 118 pounds and the residue 35 pounds. Forty-eight hours after the fillings were made the dry filling carried 120 pounds and the dry residue 42 pounds. The wet filling carried 65 pounds and the wet residue 30 pounds. At the end of seventy-two hours the dry filling carried 200 pounds and the dry residue 42 pounds. The wet filling carried but 80 pounds and the wet residue but 20. This shows plainly the effect moisture has on the fillings and residue.

Dr. AMES: I would like to ask Dr. Wedelstaedt if these residue pellets would not crush more readily on account of their shape?

Dr. WEDELSTAEDT: Certainly, they would crush more easily. They are merely round balls, and so crush much more easily than

the fillings that have flat ends. The amount of stress the wet fillings carry of this cement is surprising. I have had a great many of these wet fillings (and they were made from some of the best advertised oxyphosphates on the American market) crush between my plier points while I was transferring them from the bottle to the dynamometer.

Dr. Black: Dr. Gilmer asked me about experimental work on cements. This feature of the discussion is to my mind of very great importance; not that I think any the less of the inlays, that is important also, but the very wide use we are attempting to make of the cements leads me to feel a great interest in the study of the cements.

There has been almost no scientific study of the cements; there has been some study put upon the preparation of the cements, but almost no study put upon their physical properties—their property of absorbing or not absorbing moisture, or the strength of the cement; neither of these questions seems to have been discussed. The ability of acids to dissolve them has been experimented with in a very uncertain way, it seems to me, from reading the experimentation. Now if we have started an investigation of the cements that will lead to a reliable knowledge of nonabsorbent cements, and to a reliable knowledge of the working properties of cements to gain the greatest strength possible, we think it will be a matter of very great importance, and let me tell you, gentlemen, this can never be done simply by noticing what the cements do in the mouth. This work will have to be done outside of the mouth, and the physical properties of the material determined there, and we can rest assured that the physical properties that are found out of the mouth will be manifested in the mouth.

Dr. Truman W. Brophy: In the issue of the journal of the American Medical Association, December 1, of this year is an article on inlays. It is a reprint from a French journal, and the substance of it is this—that by the use of thin platinum foil, burnished into a cavity, the form is made for the porcelain and the porcelain is baked and then cemented into the cavity. This is set forth by this journal as something new. As we have seen by experience and practice, it is quite old.

I am of the opinion that if inlays are used at all they should be put in with gutta-percha. We know that gutta-percha

vill not dissolve out; we know that gutta-percha, if properly in-serted, will last for a great many years. I not long since saw a pink gutta-percha filling in a lateral incisor tooth that had been in nine years, and on careful examination it seemed to be preserving the tooth very well. There was no disintegration about the borders of the tooth, and it seemed to me to be in a perfect state of preservation, so I allowed it to remain there. I think if we use inlays at all, and insert them with gutta-percha, in proper form, they will be likely to last; but unless we can have our cements more reliable than they have been in the past (they may be better now) we will certainly fail.

Dr. Freeman asked the question that if a cement was good to fasten the filling in and serve as a border for the filling or inlay, why was it not good for the cavity? I think myself that Dr. Wooley has said, while it may seem like a joke that the very best possible inlay that you could put in the tooth would be a piece of gold that had been condensed into it, or, in other words, a gold filling which had fallen out of it. It would fit better than any kind of inlay that you could construct by molding. It would be rather an easy way out of the difficulty after a filling has fallen out to put on the rubber dam and stick it in. It seems rather ridiculous, but there is an element of seriousness about it.

Personally, I do not think much of inlays. I have seen too many failures. Still, the same argument might be used of other operations. I think that the best inlays now made for anterior teeth I saw in London last summer, inserted by Dr. Jenkins, of Dresden. He has a method different from that we practice, and he certainly has a body that he has used in making these porcelain inlays that enables him to match the color of the tooth quite well, and, besides, it is so beautiful and smooth that it serves a better purpose than the bodies I have seen here used. I would be very glad, indeed, if we could devise some means to imitate nature. There is not anything too good to put into a tooth that is carious. We do not know of anything good enough, and I have no sympathy with the methods that tend to cheapen dental operations if cheapening them makes them less efficient. We want to make them better. Even if more expensive, we want to have them done better than we are able to make them now.

Dr. E. J. PERRY: Although hardly apropos to the discussion, I wish to speak of eight or ten cement fillings that I have been

watching for about ten years. I can produce the gentleman any time that it is necessary to prove the statement. The cement fillings that I refer to are of tartar. The gentleman had considerable tartar upon his teeth. They were the lower incisors, and they had decayed upon their proximal surfaces; they had evidently been decayed some years before—possibly eight or ten years before he came into my hands. Cleaning the calculus off the teeth, I discovered that I was unable to get it all off. Presently I discovered that here is a row of cavities upon each side of each one of the incisors—eight or ten of them—that are perfectly filled with this tartar. Evidently the teeth had suddenly ceased to decay and the formation of tartar had begun. I polished those fillings with little strips of polishing paper, and those fillings are in position to-day and I am very proud of them. I do not know that that is a valuable suggestion. Perhaps Nature will not be kind enough to help us out in enough cases to make a practice of it.

A MEMBER: I wrote to Dr. Jenkins in regard to that particular method that he has, and he said that any one could purchase the material, but the $100 would include the furnace, not particularly the materials.

Dr. TAGGART: They did not give me such instruction; you could get them from Dr. Jenkins for $100, that includes the entire outfit.

Dr. HARLAN: I have imported one of the sets and it will be here the end of the week, and it will give you all the chance to see it.

Dr. DANA: I have Dr. Jenkins' outfit; have not used it yet. This summer I was in his office for a month or so, and saw considerable of the work; undoubtedly it is very nice work and he gets very good results with it. The material can be purchased for sixteen marks for a fifteen gramme bottle. I think they are sent to this country as samples; there is no duty or anything in connection with that.

Dr. AMES (closing the discussion.): *Mr. President*: If I were to go into the details of the construction of these inlays in a way in which it would be necessary to give a real tangible idea of how I consider they must be built to be practical and safe, it would take all night. In regard to the talk about cement being the weak point of the inlay, and the inlay being no stronger than the weak point, why that, with all deference to the speaker, can usually be disregarded. The

inlay is ordinarily so placed and so anchored, that all stress forces it into the cavity, and if it is anchored, either in the case of a pulpless tooth, given a good broad seat and anchored in the pulp canal, or, if it has a proper occlusal surface anchorage, the force is such that the cement is not strained whatever, as I look upon it, because in setting an inlay the cement is so plastic that at some points or various points the gold will come absolutely in contact with the substance of the tooth, and the cement gets no wash whatever, except at the joints, and in preparing a cavity, if you cut back the edges, give the edges a bevel and carry the inlay over that bevel—there is no wear upon the cement—because the wipe of the food is off the edge at all times, and there is absolutely no wear upon the cement. Where, in an open joint, there is attrition, if the cement happens to be one of the few reliable ones, you will find the cement just beneath the surface. I have numbers of inlays which were made seven and eight years ago, and were set with Justi cement, which I used at that time, in which possibly at some point there was an open joint, and you can find that cement just beneath the joint, and there has never been a necessity for patching. That is how much the strength of the inlay is dependent upon the weakness of the cement.

The porcelain inlays I did not consider. I have used the porcelain inlay; it is a good thing with favorable cavity form. Occlusal surface anchorage I would not depend on if I could get anchorage in a pulp canal, or the opportunity for a good square seat without cutting too much material in a tooth containing a vital pulp. If in the preparation of the cavity it ran off at a regular incline from the occlusal surface to the gingival margin, and there is a vital pulp, I would certainly make an occlusal surface anchorage and not cut into the tooth to give a square seat.

I have made some experiments similar to those of Dr. Wedelstaedt to determine the absorption of fluids by the cements. Any one can make these tests and satisfy himself, and some of you will find you have been using some pretty bad stuff. Solutions in acids and alkalies I went into to a considerable extent at one time, and as Dr. Black says, it does not mean anything in connection with what we see in the mouth. I had a good deal to say about solution of cements in ammonia at one time, but I found there was absolutely nothing in it; a cement that will dissolve in ammonia may be a pretty reliable cement to use in the mouth. As to setting

inlays with gutta-percha, I will say that if you have an inlay or a restoration with a dowel going into the pulp canal and the edges all beveled back and the edges of the inlay extending upon this surface so as to protect the gutta-perch from wear, I would expect it to do pretty well; but ninety-nine out of one hundred inlays I have made would not stay over night set with gutta-percha.

Odontographic Society of Chicago.

A regular meeting was held in the Stewart Building, October 10, 1898, the President, Dr. George W. Schwartz, in the chair.

Dr. Eugene S. Talbot delivered an address entitled, "How Irregularities of the Teeth are Produced."

At the last meeting of this society I tried to give you in a general way the causes which underlie degeneracy. I tried to show that the causes which produce irregularities of the teeth were not asserted immediately in that locality; that the same causes which produce these irregularities of the teeth also produce clubfoot, harelip, spina bifida, insanity, criminality, and all forms of degeneracy. To-night I am going to take up the subject of irregularities of the teeth alone, and for fear that some of you who are present to-night were not present at the last meeting, I shall go over just a few points to refresh the memories of those that were here, and to give to those that were not a general idea of the underlying principle.

A degenerate is one whose nervous system is unstable and whose physical development is a departure from a normal. There are two subdivisions, the mental and the physical condition. There cannot be a normal physical condition without a normal nervous system, because the nervous system presides over the development of the general composition of the body.

Each brain cell has three functions, sensation, development and growth. If a part of the brain is undeveloped, the cells will not be present. But suppose the cells are all present, suppose that in looking at the brain a cell is found here in the cerebrum of one form of development and in the cerebellum another, which represent different prolongations, like that. (The speaker here referred to drawings.) If two cells in the brain should develop as you see, and there is no connection between them, an unstable nervous system results. In other words, those two cells are like

the two points in the telegraph. If there is no line between the two stations a message cannot be sent. These cells are developing, a prolongation of one developing in one locality and another developing from the other cell. These join together and are called neurons. Suppose this cell developing in the posterior part of the brain passes down the spinal cord to another differently shaped cell. While this cell is developing, say in the cervical region, there is a neuron growing in that direction as cell development, and another one growing down in a different direction, and they unite, forming a continuous line. There is another neuron which passes to the arm. But suppose that neuron does not develop. We have here then three cells, one in the fore part of the brain, one in the posterior part and one in the spinal cord at the cervical region. There is no connection between this cell and the muscles and the bone of the arm, therefore a person can take all the nourishment he wishes, no nutrition will affect the arm.

Suppose again that this nerve has developed and is passing down the arm, but the child becomes injured and the nerve is cut off at that locality (you will understand that there would be atrophy of the nerve), that arm will not develop; it will remain small, just as in childhood, while the other arm develops to its normal shape.

The nerve cell in the anterior part of the brain, and one in the posterior part produces a neuron which passes to the jaws. Suppose that that nerve fiber is very unstable, there is no force to it. You can readily see how the jaws will be smaller than normal, or it may also grow larger than normal on account of this unstable condition of the nervous condition. This unstable condition shows why there are more deformities among idiots, the deaf, the dumb and the insane than among normal individuals. It shows why there are more deformities among prostitutes than among normal women. Why some women in old age are youthful in appearance, due to arrested development of the bones of the face, the bones remain in the child state throughout life.

I think now in a general way I have given you this condition of the nervous systems. All of these patients are nervous; every patient that comes to you with a small jaw and a constitutional irregularity of the teeth (I will call them V-shaped and saddle-shaped arches) are neurotic, and in the treatment of those patients more care is necessary. In other words, dentists should be medic-

ally educated in order to treat those patients, in removing these irregularities to know when the nervous system is getting tired. Patients have been made ill for years, from nervous prostration, as a result of these operations. Before proceeding farther we must understand something about these structures, because there is an underlying principle in regard to the jaws that has much to do with irregularities of the teeth.

In the evolution of man, the jaws are growing smaller, the brain larger. This has been going on ever since man was first created, will continue as long as man exists. The late Mr. Mummery, of London, examined some skulls in an old church in England that were supposed to belong to British and Roman soldiers. He found that these jaws measured two and one-half inches in diameter from the outside of the first molar to the outside of the first molar on the opposite side. Taking these as a standard, the same will be found among the cliff dwellers in Mexico, the early Indians, and the mound builders of this country. By mound builders I mean those people whose teeth strike squarely, not those Indians whose upper teeth lap over the lower. We do not know anything about them; they may be forty years old or 400 years old, but the Indians who have been taken out of the mound, and whose teeth strike squarely, are mound builders. I have not time to go into the subject, but you will invariably find those jaws two and one-half inches across. There is no question but what 1,000 years ago the jaws of man measured two and one-half inches. Some eight or ten years ago I measured, and had measured for me, the jaws of soldiers now in the English army and the jaws of Roman soldiers now in the Italian army, and I found that their jaws measured two and one-fourth inches, showing the difference of a quarter of an inch. Taking the measurements of the jaws of such people as are found in the dispensaries in England, Italy and this country, the jaws now measure on an average but two inches in diameter.

In the measurement of the jaws of people having irregularities of the teeth and saddle-shaped arches the diameter will be found to be from three-quarters of an inch to one and one half inches. But this has been going on for ages. I will show you a much plainer and easier way of proving it. The negro has always been considered a long-headed race, and that their foreheads recede and jaws protruded. Drawing a perpendicular line from the an

terior part of the brain (indicating), you will notice the recession and protrusion. Visit the restaurants in this city and examine the heads of the negroes and make measurements, using Prof. Flower's method. I will show you that there is not a long-headed individual. Although I have not studied the negro race in Boston to any great extent (as I intend to do), I venture to say that you will not find one there, which goes to show that the mixture of white blood and Indian blood, change of climate, soil and higher civilization, has changed the shape of the head from a dolichocephalic to a brachycephalic, and the jaws have receded to or inside the perpendicular line, proving that the jaws are growing smaller continually. Last summer, standing on the corner at Piccadilly Circus, London, I casually examined two thousand people passing, and found that eighty-two per cent of those people had jaws either on or inside of the perpendicular line. Examining three thousand school children in and around London, I found that ninety-two per cent of those children has recession of the jaws, which proves that in one generation from the adults as I found them on the streets in London, and the school children, the next generation, there was ten per cent difference in the angle of the jaw, which is conclusive in my mind of the continued smallness of the jaws.

The point I wish to make is this. That we have an unstable structure to work upon and physiologists and medical men, men who have made a great study of the development of the body, will tell you that a structure that is unstable is more liable to disease than any other. If time would permit I should say something about the decay of the teeth, pyorrhœa, etc., but it is out of the subject to-night. Hence the fact that the jaws are growing smaller and that an individual has an unstable nervous system, it stands to reason that the jaws would be affected much more readily than the feet, hands, or the internal organs. Man reached his highest physical development when he possessed thirty-two teeth. The lower forms of animal life, in the order of evolution, as Dr. Bentley told us at the Chicago Dental Society, had more teeth; they had forty-four and some forms of animals have 240, like the shark, etc. They have the primitive cone tooth. After the jaws have passed the perpendicular line, it will be found that they are getting too small for thirty-two teeth. In other words, in men whose jaws protrude beyond the perpendicular line, plenty of room will be found for thirty-two teeth. But if there is recession within it, there is no room for the normal number.

Now I must digress once more. The teeth do not change in shape and size as readily as the jaws, and why? All tissues of the body develop from a nucleus, from a single cell, except the teeth, the teeth calcify from the periphery. It matters not what kind of a constitution a child has inherited, since the pulps of the teeth begin to calcify from the outside, these conditions which the child inherit have very little or no effect upon those teeth. You see it is impossible, because the calcification is taking place from the periphery, and, therefore, the teeth do not grow smaller in proportion to the jaws. However, nature is trying to arrange for this by dropping the third molar tooth and the lateral incisor. In an examination of 670 patients I found that forty-six per cent of them did not have the third molars; that is, they might have had one, but there was one or two, or perhaps four lacking, and I found that there were fourteen per cent of the lateral incisors missing. Which tooth will go next we cannot certainly predict, but the first is the third molar; second, the lateral incisor.

In a general way I have shown how these structures are very unstable, and as a result of this condition in a child that has a neurotic system the jaws are affected quicker than any other structure of the body.

But to come back to our subject. We have to deal with evolution, heredity and atavism. Heredity is that law whereby a child inherits the structures of the parent, or resembles the parent. Atavism is that law whereby the child inherits the structures of the grandparents, or many generations removed. There is a condition met with nearly every day which is neither atavism nor heredity, by which, however, nature does take on an atavistic condition. Let me illustrate it. Two people are married, both are healthy, not only physically, but mentally; the nervous system of these two individuals is perfectly normal. The wife takes to society, which causes her system to run down and her nervous system becomes a total wreck. Her offspring as a result is a neurotic It may have a clubfoot, cleft palate, one arm shorter than the other, the heart may be on the right side, a floating kidney, etc. It does not take after the parents at all. The parents both, to look at, are normal individuals, and yet the nervous system of this woman is tired out, the ovaries and the uterus cannot perform their functions, and as a result of this condition an unhealthy child is born Take another direction. The wife does not care for society, bu

remains strong and healthy, the husband drinks or is a great smoker, or his nervous system becomes tired out from various excesses, and as a result of this a child is born with a neurotic tendency, and here is a moral and social condition which should be borne in mind: Be careful of excesses of all kinds for the sake of your children. Think of the condition that society is getting into at the present time, in thirty-five or forty years from now, with children not normally developed, that become insane, that have deformities. That is exactly the condition that takes place. Some one says it is an inherited condition; it is not so; it may not be so; it is due to excess of either parent.

The child commences to grow and perhaps has scarlet fever, or some of the constitutional diseases that produce arrested development, and the child invariably stops growing. Perhaps only for one month, three months, six months, three years, and sometimes it never starts to grow again. All of you have seen these children.

How can it be told by the teeth? It is noticed by those ridges which form upon the teeth. By referring to the chart in the books it can be told when that constitutional disease attacked the child. I saw a child the other day who had had constitutional diseases at three different times. I told the mother the date, as I inferred it from the teeth; it was correct. Again, it is frequently found in deformed bicuspids and molars. These either take the cone shape or the crowns of two or three are joined together. Now the jaws may stop growing as a result of this local condition of constitutional diseases that the child may have. The unstable nervous system may be inherited from the parents, or it may be acquired from constitutional disease, and as a result of this neurotic condition we have excessive or arrested development of tissue.

We come now to the local condition. A saddle or V-shaped arch is never seen without arrested development—first of the jaw bone—and these conditions are never seen until after the sixth year. Why? Because a thing cannot act without it is present. I was reading to-day, and in a new work, that these were inherited conditions. It is not possible, and therefore a V-shaped or a saddle-shaped arch cannot form until after the sixth year, and why?

We have the arrested development of the jaw in the first place. Then let us show why they form and how. Let that represent a line drawn through the center of the alveolar process

(drawing) of the jaw at six years of age. All the temporary teeth are in place. The first tooth which develops is the six year molar. Those teeth become fixed points in the jaw, because of the long roots and because they hold the jaws fixed for the purpose of chewing and a rest while the temporary teeth are being shed. They are the only teeth that come together and stand together for some years. I wish to say before going any further, that instead of having one dental arch, there are two arches—they are duplex—one on each side, and they do not influence each other very much. We might call them a right lateral and a left lateral arch. There is now a fixed point in the posterior part of the mouth, and a fixed portion in the anterior part of the mouth. In the posterior part of the mouth is the first permanent molar and the two bicuspid teeth. The cuspid tooth being on a larger arch than the other teeth develops outside of the arch, and therefore has greater leverage. This tooth comes down, or tries to come into place, but there is a tendency on the part of the first permanent molar to move forward and fill the space. This is due to two reasons, one is the length of the rami of the jaw. The rami plays a large part in the development of the teeth. If, on account of the neurotic condition of the child, the rami should develop short you can see very readily how the back teeth would come together quicker than the front teeth, and as a result, just like the movement of a pair of shears, the back teeth would force themselves forward and fill the space. This is a local condition which answers the purpose for an arrested development of the jaw itself. That is to say, there is not room enough between the first permanent molar and the anterior part of the mouth, for all the teeth to come into place. The alveolar process in the anterior part of the mouth being much thinner than in the posterior part, any change that takes place must necessarily be in the anterior part. When the cuspids come down into place, it is like dropping a keystone into an arch; if there is not room enough for the stone to come down into the arch, or if there is not room enough for the teeth to come into the arch it will settle outside, but on account of the leverage there is a tendency for the tooth to come to the center. The arch has to give way, because this heavy cuspid tooth is coming down, and there not being room enough, the arch breaks at the weakest point, and that is at the central incisor tooth. The cuspid forces these teeth out. The V-shaped arch results.

Perhaps that is not the case on the other side; there may be room enough and the cuspid will come down and fill the space, so that virtually there is only a V-shaped arch on one side, while the other side may be normal. No two of these are ever alike. In three thousand models I have never seen it, which shows conclusively that it is a local condition. If they were all alike or if half of them would be alike to each other, it might be considered constitutional or an inherited condition, but since they are not alike, and since two of them never take the same shape, it must be a local.

Sometimes these teeth will assume different forms. Sometimes the V-shape like that, or that (indicating), and the other side will be normal, and so on.

In the saddle-shape arch, there is a small jaw to start with, the first permanent molars come into place in the posterior part of the mouth, then the central incisors, the laterals, but now instead of the bicuspids coming down as they should, they are held in position by the temporary teeth. The cusps of those teeth being situated in the roots of the temporary teeth, and because these teeth have not been shed, the cuspid teeth are held in place. The temporary teeth being on a smaller circle than the permanent teeth, are held in place on a smaller circle, and as a result of the temporary teeth remaining in place, the cuspids come down first. Before the cuspids came down last. The cuspids come down into place just as you see them here (indicating). In a saddle-shaped arch you never see the front teeth protrude. When the temporary teeth are removed, the first permanent molars slide forward a little, and the result is, these teeth—the permanent bicuspids—are carried in a little further, and the result is a saddle-shaped arch.

I should have told you that the V-shaped arch is an atavistic condition to the reptilian jaw. The saddle-shaped arch is the carnivora shape. The tooth cannot take another form. These irregularities of the teeth may vary a little, but the development of them must take this shape. One side may develop normally, the temporary teeth may be constructed at the proper time, and the bicuspids may develop in line, while on the other side they remain in the jaw, and we have a partial saddle-shaped arch, or semi-saddle-shaped arch.

Frequently one tooth is found inside and one tooth outside, or one tooth may be on the line, and the other tooth inside, with the first permanent molar situated at that locality showing again

the saddle-shaped variety, but it is due to the temporary molar holding the bicuspid on a smaller circle than the permanent teeth would be, and then this tooth being on an incline, the first permanent molar has a tendency to force that tooth inside of the arch. That is the way those two forms of irregularities of the teeth are produced.

The other is that one jaw may be larger, that the teeth come in normally anyway; when you consider that the upper jaw is influenced more or less by the skull and the lower jaw always develops independently. On account of this independent movement of the lower jaw, not influenced very much from nervous conditions, because of the motility of the jaw the blood flows freely, causing oftentimes excessive development, occasionally an arrested jaw is found. I found in the skull of an idiot a lower jaw that was two and one-half inches beyond the upper jaw. There was an unbalanced nervous system—the lower jaw became hypertrophied. It is not really a disease, it is a normal development, or an excessive normal development, while the upper jaw was arrested in its development. There are two more conditions I want to call your attention to before I close. We have heard a great deal said about the high vault and much has been said of it especially by men who practice neurology. It is not significant at all, except that there is an unbalanced nervous system and the vault is not carried up at all. If you measure thousands of vaults, you will find that the average vault is fifty-eight hundredths of an inch in height. These vaults look high because of the contracted dental arch, that is, they look higher than they really are. But wherever you will find a very high vault, you will also find a very long, narrow alveolar process. How is the high vault formed? (Draws.) Let that represent the line of teeth; let that represent the upper, the grinding surface of the upper teeth; now here comes down the lower jaw. Six year molars are the first to develop in the permanent state and the rami of the jaws will develop until these two teeth will touch; or in other words, the two teeth will develop until they strike each other. Now if the rami have developed unusually long, you can readily see that these teeth must elongate in order that these two teeth may meet and that is the way you get the high vault. The high vault does not grow up at all, but the alveolar process grows down on the upper jaw and up on the lower jaw, in order to make the teeth meet; and it is due to those long rami of the jaw.

Another condition is the vault of the mouth. You have often seen a very thick bone running through the center, also due to a neurotic condition—an unstable nervous system. Sometimes the two halves of the jaw do not unite until late in life in neurotic children, in the expansion of the jaws in correcting irregularities of the teeth sometimes the suture can be opened through the center. No harm is done. The cause of this bone becoming thicker through the center than usual, is due to the fact that the constant chewing on both sides has created an irritation that has thrown out bone along that ridge, which makes it much harder and more dense than any other part of the jaw bone.

Hypertrophy of the aveolar process is a very important thing in regulating the teeth. It is necessary to know when hypertrophy of the alveolar process takes place. The eruption of the teeth causes irritation, and excess of new bone is thrown out; a hard, dense, alveolar process is produced. In such a case, where the first permanent molar, or second permanent molar, or both teeth, have been used for a fixed point to move the cuspid back, and instead of doing so, the molar has been brought forward, it can readily be seen how necessary it is to know the condition of the alveolar process is located about the cuspid tooth. Sometimes only one or two teeth are involved, and when that is the case, the fixed point would be so dense that when the teeth are carried back there must be resistance to overcome the hypertrophy. Two years ago I published an article in the *Dental Cosmos* on cutting away the bone, which is so simple that any one can do it. You will find that fifty per cent of the time will be saved. I can save seventy-five per cent of time in regulating teeth, and the pain involved is very slight. It is in these cases of hypertrophy that it is necessary to cut away the alveolar process, and the teeth will move much more readily, easier and quicker.

I have given you, in a general way, the principal points of irregularities of the teeth. There are many local conditions, which are purely mechanical, that I do not deem it necessary to talk upon this evening. I have given you the main points, and what I wish you to bear in mind particularly is that these children who come to have their teeth regulated are all neurotic, with unstable nervous systems; care must be taken not to unbalance them.

In the absence of Dr. Kester, the president asked Dr. Goslee to open the discussion, who stated that he was not prepared, and declined to do the same.

The president then declared the paper open for general discussion, with a limit of three minutes for each speaker.

The SECRETARY: Do I understand you, doctor, that the regular teeth, or the V-shaped arch is never inherited?

Dr. TALBOT: Yes.

The SECRETARY: If you find it in parents and children, too, you claim that it is due to a neurotic condition?

Dr. TALBOT: Yes; the arrested jaw is inherited. It may also be due to the constitutional diseases in the child.

The SECRETARY: You see the general condition coming down several generations sometimes. I will not say exactly the same, but similar conditions. I know a family now of three generations that have the V-shaped arch.

Dr. TALBOT: The two generations have inherited the small superior maxillary from the parent, but you will find that the teeth are not arranged in all three just alike, showing that it is purely a mechanical affair, the teeth on the one hand and the jawbone on the other depending entirely on the time of eruption and the space left after the temporary teeth have been shed.

Dr. J. N. MCDOWELL: Dr. Talbot has certainly given us a very interesting and exhaustive talk in the physiological, and I may say, morphological developments of the irregularities of the teeth. But it is a very hard thing to antedate the irregularities of the teeth as they come into the conditions or forms that they appear to us in. Now there are certain forms and certain conditions that are well known to us, that we can base facts upon. For instance, there are certain forms of irregularities that appear to us that we may say come to us from a neurotic condition, or from an inherited tendency, or there are forms of irregularities that appear to us that come from extraneous conditions or objects. Now these forms of irregularitles that we become familiar with give us an idea that we may base certain facts upon. That is, we may say that the irregularities may form themselves in this manner: First, to position; second, to the number of teeth; third, to locality; and fourth, to the position of the jaws. Now we know that there are certain conditions underlying these causes, which will in a certain way cause the general formation or change in the position of the teeth, and the same way in the number, the same way in the locality, and the same way in the position of the jaw.

Now we know, taking up the morphological condition of man, we may say that life is developed from a cell; segmentation takes place, and these cells go on forming, and the result is man, *genus homo*. Now from this condition, just the moment that a diseased condition of the nervous centers takes place, there is more or less change in the locality that the nerve fiber ramifies. For instance, we may take the trigeminous nerve that feeds certain parts of the face, the teeth and their auxiliaries. If there is a diseased condition of the nerve center, we will find that there is more or less change in the physiological development of the teeth, the position or sizes of the jaws and the muscles, in fact, anything relating to that part. We find the same conditions exist in kind throughout; we find the same condition in the black as we do in the white; we find there is no difference in the makeup of the tissue. However, where there is intermingling of the races, we find there is more or less coalescing of these conditions. However, in the V-shaped arch, if we find the condition that Dr. Talbot has spoken of, the molars should be in the normal position, and they always are, because in the last year, when I made the examination of about 400 cases, I found out of 400, 350 were normal occlusion of the first molars, therefore the irregularity of the largest majority of cases was limited to the anterior teeth. This shows conclusively that the position of the jaw is not always modified by the neurotic condition, but is acted upon by the muscular action of the muscles of the cheeks, the tongue and occlusion of the teeth. Another thing is that in the V-shaped arches you will always find that there is a nonphysiological development of the lips.

Dr. McDOWELL: In the examination of the facial aspect as we find it in man, there are certain conditions, as Dr. Talbot has explained, of the facial angle. He says that the lower jaw is degenerating, in other words, growing smaller, and that the upper part of the cranium is growing larger. By an instrument of my own invention I have made the measurements of a number of cases within the last year, and I have found that in the measurements of the facial angle of these cases, that where the position of the jaw is backward, or forward, I have found associated with this condition that there is *a development of malocclusion*, in other words, the occlusion is either mesial or forward and by having moved the jaw forward, you will find that there is a natural harmonizing of the cusps of the teeth, also by moving it back, which I have done

in immatured cases—that is, with a child you may be able to move the jaw back, I would not advise you to attempt that at all in maturity—but by moving the jaw backward or forward, you will find that you will establish normal occlusion, and in most every case the facial angle is restored. Now in those abnormal conditions of the jaw, you will find in most every case that there is a maldevelopment of the breathing function; that there is a maldevelopment of the position of the jaws, that there is a maldevelopment in the position of the teeth, especially the upper teeth. The malposition of the upper teeth is mostly caused by the condition of the muscles, that is, in those patients where there is recession of the lower jaw, you will find that they are, in the majority of cases, mouth breathers, that there is a condition existing there where the patient holds his mouth open all the time, and the result and effect of that is, that there is a lateral pressure here (illustrating) and dropping back of the position of the jaw. I do not think that in these cases that the jaw is growing smaller, I think that it has merely dropped backward, and the result is that of constant opening of the jaw, the posterior nasal passages being then closed by abnormal growths, the consequence of neurotic conditions, of course, interferes with the normal nasal breathing and consequently the individual breathes abnormally through the mouth.

Dr. TALBOT: Mr. President, there is very little that I can say, except I take it for granted that all of us are seeking information along these lines, no matter where we get it. The remarks that the gentleman has just made were published in the books twenty-five to thirty years ago. I do not wish to make this a personal matter, but simply to show that we should have a little originality about us. Nothing that we read or see should be taken for granted. A little study for ourselves, and verifying facts, is what we should strive to attain. I like to base what I have to say on facts. Now the gentleman can very easily when he goes home to-night put his fingers into the sides of the mouth, and see how much pressure there is on the buccinator muscles, or if he will read some of my articles that I wrote twelve or fourteen years ago, he will see that the buccinator muscles have no effect whatever upon the teeth. If he were a mechanic or an architect, he would know that pressure put upon one of the lower arches of this building would have no effect upon it; in other words, the arches of these windows and doors are made so strong that they resist the pressure of the four-

teen stories that are upon it. The same condition is true with the teeth. The dental arch is so strong that the slight pressure exerted by muscles of the cheek and lips can have no effect upon it. I mean enough to produce a V or a saddle-shaped arch. If we would think a little about these things, and would take fifteen or twenty saddle-shaped arches and study them we would see what little effect the buccinator muscle could have upon the cuspid or molar. It is perfect folly to think of bringing two bicuspids inside of the dental arch, even if there was sufficient pressure brought upon it. We speak about mouth breathing, etc. Why cannot we reason a little here. If we do we shall see that the same thing that produces the irregularities of the teeth produce deformities of the nose. The nose recedes on account of the neurotic conditions which produce the irregularities of the teeth. Excessive development of the nose, an unstable nervous system, all cases of mouth breathing, hypertrophy of the mucous membrane of the nose, are produced from the same centers of the brain. One does not produce the other, but the same thing that causes the arrested development of the jaw produces the arrested development of the bones and tissues of the nose.

SOUTHERN BRANCH OF THE NATIONAL DENTAL ASSOCIATION.

The following is a list of the hotels and boarding houses the visiting members of the S. B. N. D. Association may find convenient and desirable while attending the meeting. It will be necessary to notify the proprietor at least ten days in advance in order to secure good rooms:

Hotels.—St. Charles Hotel, American plan, $4 per day and up, according to location of room; European plan, $2.50 and upward. Hotel Royal (French quarter), American or European plan, $2.50 to $4 per day, according to location of room Cosmopolitan Hotel, European plan, from $1.50 upward. Antoine's Hotel (French), No. 713 to 717 St. Louis Street, $2 and $3. Hotel Denechaud, American or European plan, from $2 to $3.50 per day. Metropole Hotel, American plan, $2 per day.

Rooms.—Fabacher's Hotel, 50c. to $1 per day. Penn's Hotel, 50c. to $1 per day. Commercial Hotel, $1 to $2 per day. Metropole Hotel, 50c. to $1 per day. Rooms (French), Nos. 234, 237 and 239 Bourbon Street, from $1 to $3.

Private Families.—Mrs. Hawze, No. 1350 Magazine Street, rooms with board, $1 to $2 per day; special rates by the week or month. Dr. W. E. W., $2. Mrs. Joseph B. Davis, No. 1710 Prytania Street. Mrs. C. R. Van Wick, No. 1819 Annunciation Street. Miss Lulu Bailey, No. 846 Camp Street.

Any information concerning the above will be cheerfully furnished by the Chairman of the Hotels and Quarters Committee, Dr. J. Rollo Knapp, 620 Canal Street, New Orleans, La., or by the Secretary of the Executive Committee of the Louisiana State Dental Society.

The Dental Review.

Devoted to the Advancement of Dental Science.

Published Monthly.

Editor: A. W. HARLAN, M. D., D. D. S.

Associate Editor: A. E. Morey, Ph. B., D. D. S.

Illinois.

All along the line we hear that it is disgraceful to think that dental colleges and infirmaries may be incorporated in Illinois. This is the fault of the State constitution. The legislature can do nothing until we get a new and revised constitution. (The present one was adopted in 1870.) It is likely that the present legislature will pass a bill submitting to the people the project for a new constitution. If it does the probabilities are that all educational matters will be subject to the control of a new provision so that persons having a few dollars will not be able to incorporate a "college" or "university" or school of any sort without proper supervision of the authorities. At present we are powerless in this matter. The persons may take out a license, start any kind of a school, at small cost (about $25, we believe) and there is no provision for controlling such "schools" except by individual prosecution. This is a matter which has been considered recently by the heads of some of our large teaching bodies and we are likely soon to have a reform in this direction which will not only benefit dental education but all other branches of learning in Illinois.

Practice.

From the signs of the times we learn that most, if not all, of the usual operations of the dental surgeons are rapidly being concentrated into specialties. At present we have crown and bridge specialties, and orthodontia specialties, and oral surgery specialties, and pyornhœa specialties, and a host of others, to say nothing of the positive specialists in prosthesis. We believe that this is right, and that the public will get better service from the employ-

ment of specialties instead of expecting that every dentist is equipped to do all sorts of operations and give advice on all subjects. There is a large field for orthodontia, oral surgery, and in dental medicine. We believe that the practice of employing specialists for extracting teeth in large cities is on the increase, and hope it will continue to grow. There is an opening for the treatment of loose teeth and chronic abscessed teeth in any large city. If such specialists will only confine themselves to the doing of the indicated operations, there will be no complaint. It is absolutely essential that every department of dental surgery should be taught to all students, but it is not a necessity for any graduate to practice every branch of dental surgery. If our observation is correct, there are at least a dozen specialists in different branches of dental surgery in Chicago, and the number will be growing as skill and knowledge is acquired in this field. The consulting dental surgeon is still to be added to the list of specialists, but he will be forthcoming when the demand grows a little larger.

Chicago Dental Society.

The programme for the midwinter meeting of the Chicago Dental Society has been issued, and we think that most of the visitors will find something of interest in the work of every operator. There will be three papers—one by A. H. Thompson, one by M. L. Rhein and one by M. H. De Ford. These are all on subjects of scientific interest. Visitors from adjacent States will be welcome, and it is expected that there will be a large attendance.

The proceedings will close with a dinner on Saturday evening, February 4, so that all who wish to reach home will be able to take late trains that evening and reach home in time to go to work on Monday, the 6th. Clinics and papers combined seem to draw the largest attendance, and we expect that this will be a memorable meeting.

Army and Navy.

With the increase of our land and naval forces, the question of the employment of dental surgeons is again being agitated. The thing that is needed to push the movement along is to gain the coöperation of the medical and surgical bureaux of the United

States. If this can be accomplished the certainty of success is apparent. Write to your congressman and senator asking for active assistance, and, if the thing is possible, interest army surgeons and naval surgeons. These are the wheels that will help the matter along.

Dental Law.

It seems that an effort to amend our present dental law is on foot, and if it is amended so that the board can have the authority and the means to carry out the provisions of the act it will be a good thing. We have not seen the proposed amendments, but understand they hold to this end.

Dr. Ames' Paper.

The following received too late to incorporate in the discussion:

"It seems that I should have said in regard to separation, that no *extra* separation for the purpose of finishing as is necessary for the foil operation."

REVIEWS AND ABSTRACTS.

A Treatise on Plateless Dentures. By C. A. Samsoie, Practicing Dentist in Stockholm. With Forty-eight Illustrations. Translated from the Swedish by D. O. Bell. Stockholm: Published by the Author.

It is a book of 158 pages and ten chapters. It is printed in large, clear type. The first chapter gives the advantages of the plateless denture over plates. The second chapter describes the various crowns that are on the market and that are made, and gives the advantages and disadvantages of each. The third chapter treats of the preparation of the teeth and roots for the plateless denture. Chapter four describes the single pivot tooth. Chapter five is a detailed specification of a large special piece of work. Chapter six, how to make two connected crowns. Chapter seven, how to make three connected crowns. Chapter eight, specification of how to insert a large number of teeth. Chapter nine, comparison with Witzel's method. Chapter ten, repairs.

His—Dr. Samsoie's—idea is to grind the root even with the gum, then fit a pivot in the root, then grind the porcelain facing to fit the end of the root and connect the two with his adhesive compound, then remove and invest in wet plaster. As soon as that sets slightly warm the compound and remove it, then touch the tooth pins and the pivot with his soldering liquid, and lay as many cubes of his low fusing metal as the case will require, then touch them with a heated instrument until they soften, then press to place. He uses the same method in making a case with one or more teeth. The case can be ground and polished as you like. I have no doubt it is a quick way to make a crown or bridge, but I do not think the American people would like it.

Anatomy and Histology of the Mouth and Teeth. By I. Norman Broomell, D.D.S. With 284 illustrations. Cloth, $4.50. Published by P. Blakiston's Sons & Co., Philadelphia: 1898. Pp. 428.

The author is a teacher of dental anatomy and histology, and has felt the need of such a work for his own students. The arrangement is unique and differs from the usual text-book in many respects. When he takes up a subject he finishes with it before beginning another. Many if not all of the illustrations are origi-

nal, involving an immense amount of labor, which is little appreciated by the nonbookmaker. The sources quoted from in the text are credited in full, so that the reader may know when he is reading the work of the author or the source of his information. This work is printed on good paper and the type used is clear and distinct. We do not remember to have seen a more attractive looking volume from the press of any publisher in recent years. We do not criticise the arrangement or the groupings of the illustrations, as they tell their own story. There may be a few inaccuracies, but they are so few that most readers will not know of them when studying and the exact critics will point them out any way, so we will content ourselves with saying that it is the best book on the subject, as a whole, that we are acquainted with. We believe in encouraging the authors of sincere books like this, and we extend to him our hearty congratulations on the fulfillment of so laborious a task, and wish there were more authors on other subjects who had done such good, conscientious work as Broomell has done here.

FOREIGN CORRESPONDENCE.

Letter from Dr. Jenkins.

Dresden, Nov. 30, 1898.

To the Editor of the Dental Review.

Dear Sir: In the October number of the *Dental Practitioner and Advertiser*, edited by Dr. Barrett, of Buffalo, appears the extraordinary announcement that "Dr. Norman W. Kingsley, formerly of New York, has located in Dresden, Germany, as the assistant of Dr. Jenkins. He has charge of the laboratory and prosthetic work."

The only possible basis of such a ridiculous statement is, that, when upon a friendly visit at my country house a few years ago, Dr. Kingsley, during the illness of one of my partners, although at that time far from well himself, kindly came into town and gave me, in some special cases, the inestimable advantage of his great skill and wide experience.

As the publication of the *Dental Practitioner and Advertiser* has been suspended with the October number, I shall be most grateful if you will kindly publish this statement in your esteemed journal, to correct a rumor, which is as unjust to my distinguished friend as it is grotesquely flattering to me. I am, sir,

Yours very faithfully,

(Signed) N. S. Jenkins.

MEMORANDA.

To remove ink stains use chlorinated soda and then wash with clear water.

Dr. H. P. Carlton, of San Francisco, spent a few days in Chicago in January.

Prof. C. L. Goddard, of San Francisco, has gone to Europe for a six months' tour. He will visit the Mediterranean cities and the continent of Europe, Paris, etc.

During his late visit in Germany Dr. L. P. Haskell gave clinics before the *Berliner Zahnärztliche Vereingung*, beginning September 19. They were highly successful.

Dr. N. D. Edmonds, formerly clinical professor of prosthetic dentistry in the Chicago College of Dental Surgery, has gone to Europe and may possibly locate on the continent.

Vapocaine, a new method of incorporating fifteen per cent cocaine in ether is one of the newer products of the house of McKesson & Robbins, of New York. So far its anæsthetic qualities seem to be very good.

Vapocaine is one of the new products of McKesson & Robbins, of New York. We have used it in cavities by washing the cavity first with alcohol and then applying it on little squares of paper soaked in vapocaine for three minutes or less. It seems very appeasing.

ODONTOLOGICAL SOCIETY OF CHICAGO—OFFICERS 1898-99.

President, E. A. Royce; Vice President, A. O. Hunt; Secretary and Treasurer, E. R. Carpenter; Curator of Museum, J. H. Woolley; Board of Censors, C. S. Case, chairman, 1897, A. W. Harlan, 1898, P. J. Kester, 1899.

Dr. E. L. York, Bacteriologist in the Chicago College of Dental Surgery, has gone to Berlin to become associated with Dr. W. D. Miller. Dr. Brophy gave him a farewell dinner in December, the following named gentlemen being present: Dr. E. L. York, Dr. L. S. Yenny, Dr. B. F. Eshelmon, Dr. L. L. Skelton, Dr. W. L. Copeland, Dr. F. H. Gardiner, Dr. A. W. Harlan, Dr. C. N. Johnson, Dr. J. N. Roe and Dr. T. W. Brophy.

John B. Hamilton, M. D., LL. D., the editor of the *Journal of the American Medical Association*, died in Chicago the latter part of December. In the death of Dr. Hamilton the medical profession of the city and country sustain a great loss. Dr. Hamilton was only fifty-one years of age and had done the work of more than one man for many years. He was superintendent of the Northern Hospital for the Insane, editor and professor of surgery in Rush Medical College and colonel of the Sons of Veterans, member of the Library Board, and the editor of Moulin's Surgery and the Transactions of the International Medical Congress. 1887.

The southern branch of the National Dental Association, by invitation of the Louisiana State Dental Society, will hold its second annual meeting in New Orleans, La., February 9, 10, 11 and 13, 1899. The following day is Mardi Gras. Circulars will be issued later giving details as to railroad and hotel rates, etc. All members of the National Dental Association and the American Medical Association are cordially invited as guests of the southern branch.

WM. ERNEST WALKER,
President Southern Branch National Dental Association.

NATIONAL SCHOOL OF TECHNICS.

The annual meeting of the "National School of Dental Technics" was held in Cincinnati, December 28-29, 1898. The following officers were elected for the ensuing year: President, N. S. Hoff, Ann Arbor, Mich.; Vice President, H. P. Carlton, San Francisco, Cal.; Secretary and Treasurer, H. J. Goslee, Chicago, Ill.; Executive Committee: D. M. Cattell, Chicago, two years, H. W. Morgan, Nashville, Tenn., three years. Next place of meeting to be held at the discretion of the executive committee.

PARALYSIS CURED BY THE EXTRACTION OF A TOOTH.

Mühl-Kühner (*Munch. Med. Woch.*, 1898, p. 951), dentist, reports the following case: A young woman, twenty-four years old, had been suffering with paralysis of the right arm and the right side of the neck for two and a half years. This paralysis was thought to be the result of a fall, in which her right arm was fractured. When in spite of proper treatment there was no improvement, an operation was advised. As she had some trouble with her teeth, she applied to the writer for treatment. He filled several teeth, and the upper right wisdom tooth being deeply carious, was extracted. On the following day the patient came to the author, declaring with joy that the paralysis had disappeared and that she was able to move the former paralyzed parts with perfect freedom. (A similar case was reported by Dr. Semmell in the *Corr. Bl. f. Zahnärzte*, April, 1898, p. 189.)

DENTAL CONGRESS, PARIS, 1900.

The committee is composed of the following: MM. Lecaudey, Président d'honneur; Ch. Godon, Président; Dr. Queudot, Vice Président; Ducournau, Vice Président; Dr. Martin, de Lyon, Vice Président; Schwartz, de Nîmes, Vice Président; Viau, Trésorier; Dr. E. Sauvez, Secrétaire Général; Burt, Secrétaire; D'Argent, Secrétaire; Hivert, Secrétaire; Dr. Maire, Secrétaire; Martinier, Secrétaire; Siffre, Secrétaire: Rodolphe, Trésorier-adjoint.

Dr. E. SAUVEZ,
Le Secrétaire Général.

For information concerning the congress, apply to le Dr. E. Sauvez, 17, rue de Saint Pétersbourg, à Paris.

The committee in the United States for the congress is composed of: A. W. Harlan, E. C. Kirk, W. C. Barrett, T. W. Brophy, T. Fillebrown, W. E. Griswold, T. E. Weeks, A. H. Fuller, H. J. McKellops, B. Holly Smith, H. W. Morgan, H. A. Smith, J. Taft, W. W. Walker, Jas. McManus, J. D. Patterson, C. L. Goddard, L. L. Dunbar, Frank Holland..

THE THIRTEENTH INTERNATIONAL MEDICAL CONGRESS.

At a meeting of the organizing committee, held in Paris on November 15, the arrangements for the forthcoming Thirteenth International Medical Congress were completed. The date of the meeting is fixed for the week August 2 to 9, 1900. The work of the Congress will be distributed among five groups of sections composed as follows: Biological Sciences: Descriptive and Comparative Anatomy; Histology, Embryology and Teratology; Physiology and Biological Physics and Chemistry; Anthropology. Medicine: General Pathology and Experimental Pathology; Bacteriology, Para-

sitology. Pathological Anatomy, Medical Pathology, Hygiene and Medical Pathology of Infancy; Therapeutics and Pharmacology; Neuropathology; Psychiatry. Dermatology and Syphilography. Surgery: General Surgery; Surgery of Children; Urinary Surgery; Ophthalmology; Laryngology; Rhinology, Otology. Obstetrics and Gynæcology: Obstetrics; Gynæcology. Public Medicine: Hygiene, Preventive Medicine and Epidemiology; Forensic Medicine; Military Medicine and Surgery; Naval Medicine; Colonial Medicine. French is the official language of the congress for all international relations. In the general meetings and in the sections German and English as well as French may be employed.—*The British Medical Journal.*

DR. WILLIAMS.

Dr. J. Leon Williams, of London, read two papers at the meeting of the Odontological Society of New York, January 17, on "Which Shall it Be, the Empirical or the Scientific Method?" and "An Answer to My Critics." on the acid-forming organisms on the surface of enamel. The meeting was large and enthusiastic, and the papers were well received. (Dr. Williams sent his papers to the society, as he is ill in Switzerland and could not be present.) The second paper was profusely illustrated.

PROGRAMME FOR 1898-99 OF THE ODONTOLOGICAL SOCIETY OF ROCKFORD, AUXILIARY TO THE ODONTOLOGICAL SOCIETY OF CHICAGO.

Organized November 19, 1897. Dr. C. A. Kitchen, President. Dr. C. B. Helm, Secretary.

December 16. Essayist, Dr. J. L. Palmer; subject, "Care of Children's Teeth. discussion opened by Dr. E. S. Tebbetts, Dr. C. B. Helm.

January 20. Essayist, Dr. J. E. Harned; subject, "Anæsthetics and Their Use in Dentistry;" discussion opened by Dr. H. C. Gill, Dr. M. A. Banks.

February 17. Essayist, Dr. A. M. Harrison; subject, "A Dentist's Record and Account Books;" discussion opened by Dr. C. J. Sowle, Dr. M. R. Harned.

March 17. Essayist, Dr. C. B. Helm; subject, "The Border Line Between Crowns and Fillings;" discussion opened by Dr. C. A. Kitchen, Dr. E. H. Allen.

April 21. Essayist, Dr. J. J. Reed; subject, "Habits and Conditions of the Mouth;" discussion opened by Dr. B. F. Ells, Dr. A. M. Harrison.

May 19. Essayist, Dr. E. S. Tebbetts; subject, "Making Dental Instruments;" discussion opened by Dr. J. L. Palmer, Dr. J. J. Reid.

June 16. Essayist, Dr. M. A. Banks; subject, "Sulphuric Acid in the Treatment of Pulpless Teeth;" discussion opened by Dr. F. C. Gill, Dr. J. E. Harned.

October 20. Essayist, Dr. E. H. Allen; subject, "Comparison of Filling Materials;" discussion opened by Dr. Bryant Kerr, Dr. M. L. Hanaford.

November 17. Essayist, Dr. C. A. Kitchen; subject, "President's Résumé of the Year's Work;" discussion, general.

THE TREATMENT OF SORE MOUTH IN PREGNANT WOMEN.

For the prevention of this complication of pregnancy, *La Presse Médicale*, of September 21, 1898, recommends the habitual use for four months prior to parturition, of a mouth wash designed to prevent acid formations in the mouth. The patient should visit a dentist in order to have the teeth thoroughly cleansed and

carious places attended to. In many instances it is necessary to restore or maintain the normal alkalinity of the buccal secretion by alkalies such as bicarbonate of sodium. The following may be used as a mouth wash or dentifrice:

℞ Bicarbonate of sodium, } .....of each, 10 drachms.
Carbonate of lime, }
Refined camphor..... ..... 2 drachms.

Or,

℞ Carbonate of lime. .....10 drachms.
Salol .... 2 "

In rebellious cases, where there is much swelling of the gums and mouth, a wash of chlorate of potassium may be necessary, or it may even be necessary to touch the ulcerated spots with permanganate of potassium. The following formula may prove useful:

℞ Chlorate of potassium ....1 drachm.
Rose honey..... .....2 "
Glycerine .....6 "

In very obstinate forms the spots may be touched with the following mixture:

℞ Tincture of iodine.....2 drachms.
Glycerine .....6 "

When permanganate of potassium is used we employ permanganate of potassium, 3 grains; distilled water, 1 ounce.

MASTICATION A LOST ART.

Mastication is rapidly becoming a lost art, and, although we have become hardened to the fact that three-fourths of the dyspepsia is due to this cause, it might surprise some of us to know that the early decay of the teeth and diseases of the gums are occasioned by this same lack of maxillary exercise. A disease of the gums, called Riggs' disease, which is every day becoming more common, is caused almost entirely by the want of proper mastication. Twenty-five years ago this trouble was not considered of any importance by the dentist on account of its rare occurrence. To-day it is given more care than the decay of the teeth, as he is frequently consulted by patients who have a full set of natural teeth which are quite loose in the jaw. Aside from this they are sound and healthy; and after a certain development in the disease nothing can be done to help them. By lack of exercise the blood which should nourish both the bones and the gums is not carried to the part; nor does the blood carry sufficient material to the teeth, hence the enamel formed is defective and early decay results. Frequently, too, the mechanical development of the jaw is arrested by this same want of motion.

Among the earlier races defects of the jaw and teeth were almost unknown In examining the skulls of thousands of Indians, early Britons and Chinese, not a single irregularity of the jaw is found, and the teeth that are present are sound and well formed. The food which they lived upon, such as roots, herbs, corn and uncooked meats, required a good deal of chewing in order to prepare it for the changes to follow, and as a result the muscles of the jaw were dense and hard, the bones well developed and compact, the teeth large, regular and firm. Most of the food among the better class of people to-day is cooked so as to require very little mastication, and the consequence is that the muscles have become flabby, the jaws slender and the processes for the attachment of the muscles almost obliterated.

NDIANS PRACTICED DENTISTRY—ANCIENT TEETH FOUND IN THE TOMBS AT MITLA ARE FILLED WITH IRON AND GOLD.

Mr. Leopoldo Batres, national curator of antiquities, has made an interesting present to his friend, Dr. Howe, the dentist.

It consists of some articles discovered in one of the tombs of Mitla. The articles in question are a portion of a skull, a glass bead, a little copper bell, just like those which are at this day tied around the necks of kittens, and an upper left bicuspid tooth with a circular incrustation of pyrites of iron in front, all from the same skeleton.

It is no new fact that some of the aboriginal people of Mexico wore ornaments or incrustations in their teeth. Lic. Alfredo Chavoro possesses a front tooth taken from a tomb at Palenque, in the middle of which a green stone is set. Sometimes the incrustations were of gold, and the incrustations of iron pyrites, when they were new and the sulphur in them was fresh, undoubtedly shone like gold.

There is reason to suppose that only the eight front upper teeth were incrusted, at any rate as a rule, for a second bicuspid given by Mr. Batres to Dr. José J. Rojo, the young Mexican dentist in Dr. Howe's office, and also taken from the Mitla tomb, is without any such incrustation. On the other hand, a canine given by Mr. Batres to Dr. Rojo has the incrustation, and also affords evidence that these adornments were made during life and not after death. The present condition of the tooth shows that the incrustation had reached the nerve cavity and destroyed the life of the tooth, a process that argues life in the subject, as decay of the teeth does not occur after death, the microbes of organisms which cause decay dying with the individual.

As to the object and significance of these incrustations, they are a matter of conjecture. They may have been affected by all who could afford them or they may have been a distinctive mark of some rank or cast. What is evident from the specimen possessed by Dr. Rojo is that they must have caused suffering to those who used them, and, therefore, it is to be inferred that the fashion or custom which prescribed them must have had a strong social or religious sanction.

Another custom revealed by the teeth found in these prehistoric tombs is that of notching the teeth so as to form dovetailing indentations. Each contiguous pair of upper front teeth were notched for a certain distance upward and sideways so as to bear a resemblance to battlements turned upside down. The lower teeth were alternately cut off and left of their natural size, so as to fit in with the notches above. In other words, a lower tooth situated below a cavity above was left of its natural size and the adjoining tooth was cut off for some distance. Of course the upper and lower teeth thus treated would not meet at once, but it is a fact well known to dentists that if an upper tooth is cut off the corresponding lower tooth will gradually grow up to it, and vice versa, if a lower tooth is sawed off the corresponding upper tooth grows down to it. Therefore in course of time the notched teeth of these prehistoric Indians fitted into one another exactly and must have given them a peculiarly firm grip upon anything they got between their teeth.

The fragment of skull which Dr. Howe has, as well as the tooth, is colored red, which must have resulted from their being dipped in mercury. This was naturally a post-mortem operation.

The cavity in the tooth in which the incrustation of iron pyrites is inserted (it is loose now and easily comes out) is perfectly circular and symmetrical. It argues good instruments and skillful workmanship. The instruments used were of tempered copper, the art of producing which has been lost.

The little bell taken from the tomb and which is also one of Dr Howe's valued possessions, is green, of course, but it is otherwise in perfect preservation, and it tinkles just as audibly as it did when deposited in the tomb thousands of years ago by a race of people that perished.—*Mexican Herald.*

THE

DENTAL REVIEW.

Vol. XIII. CHICAGO, FEBRUARY 15, 1899. No. 2

ORIGINAL COMMUNICATIONS.

Do the Pulps of Replanted Teeth Ever Reunite With the Tissues from Which They Have Been Separated?

By A. H. Fuller, M. D., D D S., St Louis, Mo.

During the discussion of a paper read before the New Jersey State Dental Society (see *Items of Interest*, September, 1898, page 72) Dr. Register is reported as having said, page 693 same journal, "I have had some experience both in implanting and replanting teeth. * * I do not believe for a moment that under any conditions a tooth can be removed, replaced and the circulation in the pulp reëstablished. I think such a thing is absolutely impossible, etc."

An opinion given in this way makes an impression, especially upon young practitioners, and I think is misleading. I do not believe that the doctor in expressing this opinion expresses that of any great portion of the intelligent members of the dental profession. The literature that bears upon this subject—text-books, transactions and journals—as well as my own experience, certainly leads me to differ with him.

To absolutely prove that a tooth has a living pulp with blood vessels and nerves, and blood circulating through it, is not always practical; but to prove it to the satisfaction of reasonable and observing dental practitioners is not so difficult. Again, to prove a statement of an occurrence which has taken place years before is not always an easy matter; but when the party is truthful and intelligent, and the facts were necessarily impressed upon the mind of the witness by the part he or she took in the occurrence, we should accept such as evidence.

Some cases that would ordinarily be taken as evidence of the reunion of the pulp after the teeth had been knocked out and replaced are related on pages 35 and 117, Vol.. IV, Dental News Letter. Again on page 584, Vol. VII., *Dental Cosmos*, Alex. I. Bigelow, Clinton, Mass., at the request of the late Prof. J. H. McQuillen, makes the following statement: "Nine years ago I was running over some logs and accidentally tripped, fell forward, striking on my mouth with considerable force, and cutting my lower lip quite through on the upper centrals. I naturally sped to the house, distant about twenty rods; on opening my mouth for inspection one tooth was missing; my father went in search and found it a few yards from where I started. The tooth was inserted and forced home by 'hand pressure,' and remains as firmly articulated and serviceable as the other incisors, the only perceptible difference being a slight yellowish tinge. These are the facts, and so much of the foregoing as will contribute to the cause of science you are at liberty to make use of."

On page 31, Vol. VIII., *Dental Cosmos*, Dr. J. B. Davis, of Trenton, N. J., relates a case of a student at Princeton College who had three front teeth driven up into the jaw—two centrals and a lateral. He says: "I extracted the teeth, pressed the fractured bone back in place, and then replanted the teeth in their sockets. secured them in place, etc. This was fifteen years ago. The young man is now practicing law in one of our courts, and I doubt the ability of any man to point out the teeth that were replaced." The doctor relates two other cases in the same article. On page 383 Vol. X., *Dental Cosmos*, Dr. H. L. Eades refers to a dentist in Zanesville, Ohio, who had extracted and replaced a molar tooth for a lady, that had since done good service for eleven years, and now had to be again extracted, it being found aching from an exposed nerve.

On page 534, Vol. XIX., *Dental Cosmos*, Dr. John Allen, before the New York Odontological Society, related a case in his practice where he had replanted four teeth that had been out of the mouth two hours; they were replanted some time since, remained firm, retained their color, etc. Question: Did you fill the roots of the teeth that were kicked out by the horse? Ans.: Dr. Allen. No, sir. My impression is that the nerves united again; but I cannot say positively. I only judge from the fact that the teeth retained the color afterward for twelve years all right.

On page 551, Vol. XXIII., *Dental Cosmos*, Dr. J. Taft, Cincinnati, Ohio, discussing replantation at the International Medical Congress, London, says: "In every instance in which a healthy tooth in a healthy person was replaced, he should expect immediate and permanent union. The presence of pericementum upon the root is valuable but not essential to repair." He had seen cases in which it had been removed and the tooth became quite firm and continued to be so, and in one of these instances the *pulp vessels* had united and the pulp lived. During the same discussion, page 552, Dr. I. Jozsef, Buda Pesth, related a case where he extracted an irregular and impacted lower molar, unavoidably removing the second bicuspid. The latter he replaced and two years after the tooth was firm and as sensitive to heat and cold as were the neighboring teeth. He further stated that in Bonn there was a specimen of a longitudinal section of a dog's jaw and tooth. The latter had been replanted and the blood vessels of the pulp are shown to be united and continuous with the trunk in the bone. Another and similar case is in Berlin. *Dental Cosmos*, Vol. XVIII., page 442, Dr. L. Rabatz, court dentist at Vienna, Austria, among other things, in a long article, lays down the rule: "If the pulp and peridental membrane are sound, replant the tooth at once as it is."

The late Dr. Wm. H. Atkinson, page 304, Vol. XIX., *Dental Cosmos*, says: "I am astonished at Dr. Cutler's unwarranted conclusion that a ruptured pulp can never reunite by being replanted. We have numerous instances of that having been proved positively, where the teeth have been extracted accidentally before they were completely developed; and in other instances teeth have been extracted—rupturing the pulp connections—the tooth replaced, after which the roots were developed to completeness." Continuing, Dr. Atkinson says: "I have not had the good fortune to have such accommodating cases as to allow me to make such discoveries by the adequate examination after death. I believe I have four or five teeth in the mouths of patients, which have been extracted and replanted, and which have living pulps in them. These teeth were fully formed in adults."

In the *Missouri Medical Journal*, 1875, page 63, Dr. R. J. Porre, formerly of this city, now of Cincinnati, Ohio, relates a case: Julia D., eight years of age, fell from a swing about one hour before she was brought to his office, knocking out the right upper central incisor. The tooth lacked about two lines of bony structure to complete its

formation. The alveolar process was also fractured. Tooth replaced in the socket and retained by ligatures. After the tooth became firm, upon examination by good light and magnifying glass, could discover no change in the color of the tooth. When the patient was discharged, all the indications were favorable.

In my own practice, I have several cases which I am as certain as anything can be that the pulps have reunited with the ruptured portions remaining in the jaw.

One case, a little girl about four years of age (the daughter of a physician whose office was in the same building and adjoining my own) was going up a short flight of stairs, fell and striking her face on the edge of a step knocked the two central incisors out and into the mouth. I was called in, and immediately replaced the teeth, which were in a measure supported in their sockets by the laterals. I made a gutta-percha splint and kept the case under observation until the teeth became firm. The pulp of the right superior central died and was afterward removed and canal filled; the other reunited and was a healthy tooth, remaining so until the root was absorbed, and the crown was picked out by the father, as was that of the dead tooth. Another case, that of a lady patient, who when a little girl, fell from a swing, knocking out the two superior central incisors; her father being a dentist, replaced them in their sockets immediately, and calling in Dr. J. Y. Crawford, now of Nashville, Tenn., a retaining splint was made and adjusted by the doctor, and the teeth securely retained in place. This was at least twenty years since. The teeth to-day are both sound, the gums around them perfect in every outline and the teeth in every way beautiful teeth in the mouth of a handsome woman.

Cases can be brought, almost without number, to prove that the pulps of teeth frequently unite with the parts from which they have been separated; and this fact should be known, as in numerous cases it would be a factor in determining what we should do or what would be the best thing to do in case of an accident of this kind.

The Dental Profession in Charity.*

By Carl Theodor Gramm, M. D., Chicago, Ill., Professor of Oral Surgery, College of Physicians and Surgeons, Keokuk; Attending Stomatologist, Michael Reese Hospital, St. Joseph's Hospital and United Hebrew Charities Dispensary; Lecturer on Stomatology, St. Joseph's Hospital Training School for Nurses, Etc., Etc.

Four years of active hospital and dispensary service in this city has impressed very forcibly upon me the fact that the dental profession, as a body, should take a keener interest in the lamentable condition prevailing among hundreds of thousands of children in this country whose mouths and teeth are being neglected, mainly through ignorance or because of the poverty of their parents. I have not reference to that enlightened portion of our population which comes under the conscientious care of the profession. I write of that teeming multitude which never comes into the presence of intelligent advice, those of that great swarm who are reduced mentally and physically, but whom the inevitable law of the survival of the fittest has not yet mown down, who will live on and become part of this body politic. Only those of you who have labored among them, for the sake of science or charity, can appreciate how discouraging is their outlook.

Fully ninety per cent of my several thousand dispensary patients have lost the crowns of the permanent first molars before the age of eight and come begging to have the remnants removed. Their second molars, bicuspids and incisors are destined to be lost long before mature life. I see more abscesses in one hour of a Tuesday afternoon at the U. H. Charities' Dispensary than I meet in three months of office practice. Ulcerations of gum and of buccal tissue, because of necrotic, overturned, unresorbed, deciduous roots, abound at every clinic. The mouths of these people are as culture tubes, and ptomaines clog their physical and mental activity. Toothache and neuralgia are considered daily occurrences of not much import. A dirty rag tied about the jaws and perhaps some toothache drops from the drug store constitute the remedies. Oftentimes mothers bring their little tots and ask to have aching deciduous molars removed six years before they ought to be shed.

My Wednesday afternoon clinic is at St. Joseph's Hospital. In

*Read before Odontographic Society.

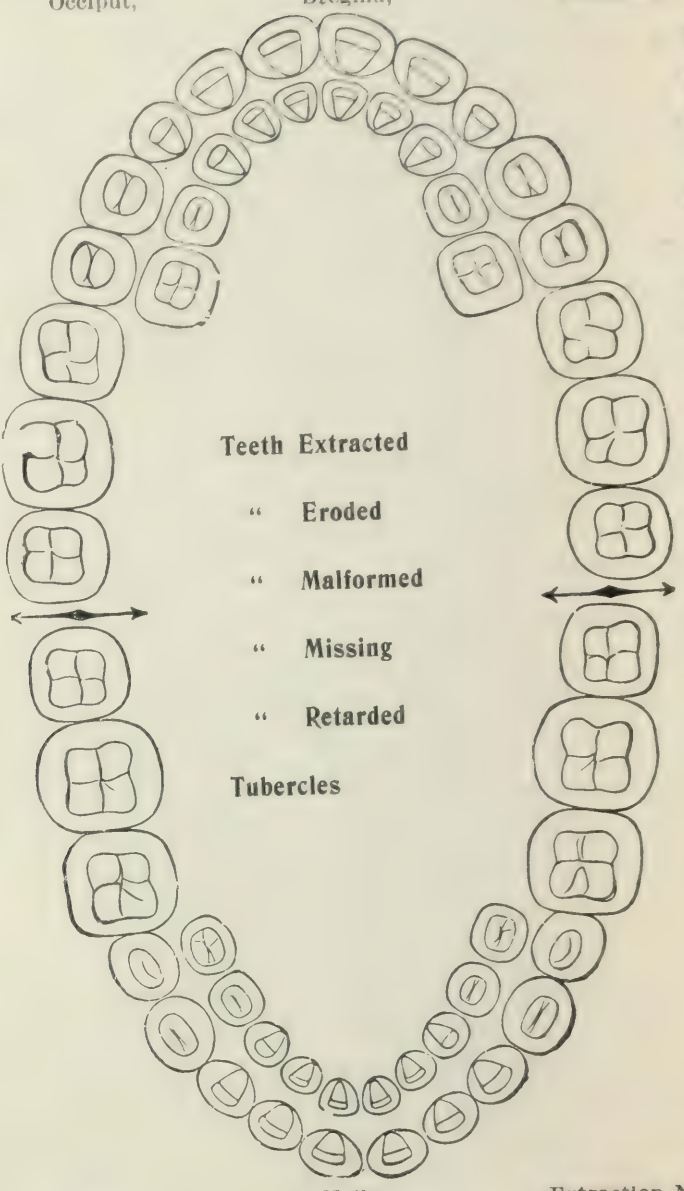
EXAMINATION BLANK.

Place of Observation. *Date.*

1 Name,
2 Sex.
3 Nativity.
4 PARENTS Consanguinity . . . . . .

Father.	Mother.
Nativity,	
Living,	
Dead.	
Cause of Death.	

5 Age.
6 Height.
7 Weight.
8 Head. Occiput, Bregma, Forehead,
9 Face, Zygomae
10 Jaws, *Deposit on Teeth*
11 Thyroid Gland, Salivary
12 Lymph. Gland, Serumal
13 Alveolar Proc's
14 Body, Green-stain
15 Chest, (erosion)
16 Broncho, Gums
17 Temperament,



18 Eyes,
19 Hair, Skin, F. Nails,
20 Lodging,
21 Nutriment,
22 Drink,
23 Cleanliness,
24 Disease Present.
25 Disease Past,
. . . . . .
26 Medication Past,

Extraction No.
Removal of Calculus No.
Remarks

Ear	Suppuration
	Side
	Sleeping Position
	Deafmute
	Eustach. Tube
Nose	Deflection Sep.
	Turbinates
	Adenoids
Throat	Tonsil Orai
	Tonsil Phar.

Examination blank proposed by Dr. Gramm, for the enlarged clinical work in Chicago.

the neighborhood are many laboring people, and their children are, as a rule, bright and intelligent. The condition of their mouths and teeth, however, is not much better.

The consequent lasting injury to these children, these coming men and women, is too well known to you to need elaboration here. In all cities are reading rooms, gymnasiums, bath houses, lunch rooms, and beds and medical dispensaries for the impoverished, headed and sustained by honorable and high minded citizens—institutions that are the pride of every municipality. While there have been and always will be abuses of these gifts, enlightened management of philanthropies is rapidly minimizing these abuses, and the good that they have done the individual, the city and the nation, can be appreciated only by those who have come in intimate contact with those whom it is designed to aid.

We know that the free medical dispensary practice in most of our large cities has grown to be a nuisance. It needs reorganization. It needs to be established in association with recognized bureaus of charities; it needs reorganization and establishment *by the medical profession as a body.* Until then, small selfishness, dishonesty and desire for aggrandizement of the petty individual will continue to heap contumely upon an otherwise useful institution.

The medical profession owes and performs its duty to the poor. Occupying an equal level, the dental profession, its members constituting a body of public men, serving the commonwealth, should assume the duty of ameliorating as much as may be possible the conditions coming within the bounds of its special sphere.

The plan I wish to present for your consideration is to establish in the poor districts of the city ten dental dispensaries managed by committees from your societies. The various social and college settlements, the hospital and medical dispensaries of this city would gladly welcome such an organization as this one proposed, and donate space, light and heat for the prosecution of the work. Let us assume that 180 of the nearly 800 dentists of this city, of whom more than 300 are members of your dental societies, would be willing to devote each one hour a week to the service of the very poor. For the sake of convenience of both patient and operator, let the hours for such service be from four to five and five to six o'clock in the afternoon. On the correct principle that pauperism should be discouraged, the nominal fee of ten cents for each plastic filling should be exacted. The income figured on the basis that each

operator would in the hour allotted him insert two plastic fillings, would amount to nearly $2,000 a year, an income sufficiently large to purchase the necessary instruments used in the work. This mild effort would result in giving 9,360 hours of work during one year, being equivalent to the labor of one man working six hours a day for five years. This effort would result in saving nearly 20,000 teeth annually by plastic fillings. The amount of good done by the timely extraction of diseased roots by preventing malformations of the face, by encouraging cleanliness and by giving general instruction in the care of the mouth, would be incalculable. Prosthetics could best be referred to the dental college infirmaries, which would be rather aided than interfered with. The benefits which these college infirmaries have conferred upon the poor have long been recognized. I hope that they may soon be able to join in some plan by which they may exclude from the clinics those able to pay the fees of reputable dentists. The scientific interest in records kept would be one of the valuable fruits of this work; not the recording merely of the amount of service rendered, but the filling out of a record like the one shown you here. This one I arranged five years ago. Take 10,000 records like this one, faithfully and accurately kept, and realize, if you can, the value these statistics would be to the anthropologist, the medical man and the dentist of the future. Neither would these clinics be barren in interesting cases of malformations, of anomalies, and pathology.

In order not to have this charity abused, the proper aid, which the Bureau of Associated Charities of this city is able to furnish by means of corrected lists of the worthy needy, should be accepted. The Bureau of Associated Charities of Chicago has divided the city into ten districts, with a superintendent and aids allotted to each district. The system of discovering the worthy needy and the unworthy has been reduced to a science by this organization. Their lists are full and complete. By referring applications of unknown individuals to these district superintendents the worthiness or unworthiness of the applicant can soon be detected. A system of this kind is absolutely necessary if a well intended charity is not to develop into a nuisance. I have the assurance of the secretary of this organization that a dental charity association would be given all the aid desired in this direction.

In conclusion, then, (1) the need of dental services for the poor is apparent to all observers.

(2) You as dentists are the only competent individuals to perform this task.

(3) No great expenditures of time or money stand in the way of the performance of such a charity.

(4) Your fellow-men, who are prominent in philanthropic affairs, are ready to aid you and to lighten your burden to the utmost degree.

(5) The whole scheme is not only worthy, but practical.

(6) If charitable impulse joins with professional skill and honor, it will result in the fuller rounding out of the professional status. Will not the Odontographic Society of Chicago take the lead and show its interest in humanity?

Bacteriological Investigation of 220 Mouths with Special Reference to Tubercular Infection.*

By George W. Cook, D. D. S., Chicago, Ill.

Some years ago, while doing bacteriological work in the laboratory at Mercy Hospital, Dr. Stanly P. Black, then Pathologist at Mercy Hospital, advanced the idea to some of his students that the mouth and pulp canals of decaying teeth might possibly be a source of tubercular infection of the cervical and neighboring lymphatic glands, and that if a systematic examination of the saliva of a series of patients was made, it would probably show the presence of tubercle bacilli in a greater number of mouths of supposed nontubercular individuals than has yet been conceived of.

Acting upon Dr. Black's suggestion, I undertook a systematic investigation of the subject, during the course of which I examined the saliva and débris from decaying teeth of 220 individuals, a few of which were from my private practice, but the most were taken from dispensary patients.

Cover glass preparations were made from the saliva and débris found in the mouth of each patient, and stained especially for tubercle bacilli. Cultures were also made, so as to study the various forms of bacteria generally present in the saliva.

While a great number of bacteria were found, most of which are constantly present in the mouth, a few forms were found in some mouths of more than ordinary pathological interest.

*Read before the Chicago Dental Society.

Of the bacteria constantly present, and of no special pathological significance, we might in this connection mention the following: Leptothrix buccalis maximus, leptothrix innominata, bacillus sputigenum, and spirochaete dentium.

Right here it might be well to mention that the bacillus buccalis maximus so often resembles the segments of leptothrix maximus that it is quite difficult to distinguish the one from the other.

But it is only the pathogenic bacteria that are of interest to us as dentists, as they alone are capable of causing pathological conditions with which we have to deal. Of the more common pus forming bacteria found in the mouth, the staphylococcus pyogenes albus and aureus were found present; the former was present in 47 out of 107 mouths, and the latter was found in 11 cases out of 107 patients. Also the streptococcus pyogenes was found in 68 out of the 107 cases. The bacillus crassus sputigenus was found in 6 cases out of 107. This is a pathogenic germ, but, so far as I have been able to find out, has not been well studied.

The micrococcus tetragenus was found in 11 mouths out of 62. The cases in which this germ was found were suffering from pulmonary tuberculosis.

The bacillus salivarus septicus was found in 3 cases out of 52 examined. Here the germ was found in the pulp canals of teeth that had been left open for some time. In one case it was found in a tooth that had been filled but twelve hours when it began to make trouble. The filling was taken out and the pulp was found to be dead—probably for some time. Evidently the tooth had not been properly prepared before filling it. Cultures were made, which showed a mixed infection, this germ being present in abundance. The micrococcus gingivæ pyogenes was found in a culture given me by Dr. Hinkins, and again found in a culture from a case of pyorrhœa alveolaris.

The bacterium gingivæ pyogenes was found in 4 cases of suppurating tooth pulps.

The micrococcus croupous pneumonia was found in 7 cases out of 92 examined; all of these patients were suffering from what they called a bad cold on the lungs and one of them was taken down a few days after the examination with pneumonia. This case will be referred to later on.

In this connection an opportunity presented itself for the study of the diphtheria and the pseudo-diphtheria bacilli. The

true Klebs-Loeffler bacillus was found in 14 cases out of a total of 186 cases, and the pseudo-diphtheria germ in 21 out of the same number of cases; the latter were found in decaying teeth, and around the necks, sometimes under the margin of the gum. In the case of the true Klebs-Loeffler bacillus in two cases the germs were found in the pulp canal, and seven cases in the saliva. In two cases the germ was found in scrapings from the posterior part of the tongue and in the remaining three cases it was found around the neck of the teeth. But time and space will not permit of a further discussion of this subject. Suffice it to say that in none of these cases was there any evidence of recent diphtheria, or of recent exposure to the disease.

Another case of more than passing interest came under my observation. I was called in consultation with a physician regarding the advisability of extracting a tooth that had been filled only the day before. The physician said he believed the patient had erysipelas. I found it impossible to remove the filling, and both doctor and patient insisted upon having the tooth extracted, which was done at once. On removing the filling the pulp chamber was found to be filled with cotton—the débris not having been thoroughly removed. Examination of the contents showed the presence of the streptococcus erysipelatus. There was every evidence of a streptococcus infection, and it was only with the most heroic measures that the patient was saved. As this infection could only come from without, the patient must have been infected in one of three ways: (1) By infecting herself from already existing erysipelas in her own person; (2) by coming in contact with some one suffering from the disease; or (3) by the infected instrument of the operator. No erysipelatous infection could be found in the previous history of the patient, and the only source to which the infection could possibly be traced was that in the family an elderly lady had suffered from erysipelas some three months before. To be sure, the instruments of the operator might have been the cause of the infection.

Again, in this connection it might be well to mention a case of gonorrhœal infection that came under my observation in my private practice. A man of good family came to my office with an upper first molar badly broken down; in fact, nothing remained but the roots. I gave him a card to Dr. Slonaker, but on his way to see Dr. Slonaker, he met a friend who took him to another place

where they extracted the tooth without pain by injecting something into the gum. Some two days afterward the young man returned, having a very sore mouth. On examination, an ulcer about the size of a dime was found on the mucous membrane near the lingual root of the tooth, where the needle had entered in injecting the drug. The bone was exposed. On microscopic examination of the pus, I found the gonococcus, and told him he had gonorrhœa, at which he expressed some surprise, but promptly admitted that he had a case of urethral gonorrhœa. He also admitted that he had frequently felt the place where the needle entered. While there is no good reason why the mouth should not be the seat of gonorrhœal infection, yet in so far as I have been able to find, this is the first time the gonococcus has been found in the adult mouth. Rosinke reported a few cases in the new-born, the infection always taking place where the pavement epithelium had been removed. While the finding of these pathogenic bacteria in the mouth is interesting, and suggestive of the necessity of making frequent bacteriological examinations of the saliva and débris from ulcers frequently found in the mouth, the main subject to which I wish to call your attention in this paper is tubercular infection of the mouth and the neighboring lymph glands. When we consider the liberal blood supply to the teeth and mucous membranes of the mouth, and also the many lymph channels leading from the mouth tissues to the neighboring lymphatic glands, it is not surprising that the gland should become the seat of infection by pathogenic bacteria entering the blood and lymphatic system by way of the mouth.

The first of this series of cases was a young girl, aged thirteen, who applied to have her teeth extracted. We at once made cover glass preparations from several decayed molars and stained them for tubercle bacilli, finding a number of tubercle bacilli, especially on the slides made from a lower twelve year old molar. After repeated examinations with positive results, the patient was lost sight of. The fact of interest in the case was that there were no other evidences of tuberculosis, the lymphatics, lungs and other organs being entirely free from the disease, and the patient seemed to be enjoying comparatively good health.

The second case was a colored man, aged eighteen. On examination it was found that all the posterior teeth in the lower jaw were decayed down to the gum. Cover glass preparations were

made from all of the decayed teeth on the day he presented himself at the clinic, as it was not likely he would return. Tubercle bacilli were found in only two slides—one from the saliva, and one from the débris found in the pulp canals. Our expectations were realized, as he did not return. On being questioned, he said he had been troubled with a cough, but at the time of examination was entirely free from any. In general appearance he might be taken for one possessing a tubercular tendency. No physical examination was made.

The third case was a young girl, nine years old. The child was sickly, having a saliva neutral in reaction, differing from the other cases. I had the opportunity to see the little patient several times, and could therefore make a more thorough examination. On the third examination tubercle bacilli were found in the scrapings from around the roots of the teeth. After this the germ could not be found, although seventeen examinations were made in all. The character of the bacteria changed from time to time. No signs of tuberculosis in other organs could be found upon careful physical examination.

The fourth case was a girl, seventeen years of age, who had for some time been in rather poor health, her teeth being somewhat neglected. On the lower right jaw the first and second molars were badly decayed. Bacteriological examinations were made on several successive days. On the third examination a tubercular focus was found in the second molar. After several more examinations at intervals of a few days, the teeth were extracted. Five weeks later the patient returned with a small nodule at the lower border of the inferior maxilla. I told her it was probably tubercular, and advised her to consult a physician at once. Her physician began local treatment, assuring her that the trouble would soon pass away. But instead of passing away, other nodules began to form, when she consulted a second physician, who advised an operation for the removal of the glands. The lady finally went abroad, and when last heard from she had pulmonary tuberculosis, no operation having been done.

The fifth case was a washerwoman who, at the time she presented herself at the clinic, was pregnant. I made several cover glass preparations from the débris of decaying teeth at my first examination, which showed the presence of tubercle bacilli, and in a few days later the bacilli were found in the saliva. I made thirty-

one subsequent examinations, all of which were negative respecting the presence of tubercle bacilli. So far as I know, the patient is enjoying good health at present.

The sixth case was a boy, eleven years old, who had a badly decayed left lower first molar, with a fistula opening externally at the lower border of the inferior maxilla. Tubercle bacilli were found in the pulp canal and in the necrotic tissue. No other evidence of tuberculosis could be found in other parts of the body.

The seventh case was a colored boy, thirteen years of age, who had considerable swelling on the right side of the lower jaw. All the back teeth were decayed down to the gum. On examination tubercle bacilli were found in the first and second molars. A few days afterward the teeth were extracted and the patient was not seen again for some time. When seen again, there was considerable enlargement of the lymphatics about the neck and unmistakable evidence of tubercular infection by way of the pulp canals.

The eighth case was the one already referred to as coming down with pneumonia soon after the examination. The patient was seen again in about two weeks, when tubercle bacilli were found upon three different occasions. In about two weeks the case was lost sight of. This was probably a case of tuberculosis following pneumonia, or of tubercular pneumonia, which is quite a common occurrence.

The ninth case was a little girl, nine years old, who had always been delicate. Her teeth were badly decayed; both lower *six* year old molars were in an especially bad condition, one having a putrescent pulp, and the other being dead and open. Adenoid growths were present in the pharynx, which gave her considerable trouble. Her saliva was examined nineteen times on different occasions with negative results, but in the scrapings from around the teeth the tubercle bacilli proved to be present. Furthermore, it might be of interest to state that the pseudo-diphtheria bacillus was found in the scrapings from the mucous membrane of the posterior part of the tongue and palate. No other evidence of tubercular infection could be demonstrated.

The tenth case was a young girl, eleven years old, who had a *six* year old left lower molar with an open pulp canal. She also had a swelling at the lower ramus of the jaw. The tooth was examined for tubercle bacilli with positive results. The canal was left open for a few days, when a streptococcus infection took place and a large abscess formed.

On extraction of the tooth, a sinus was found leading from the tooth to the enlarged gland. Here numerous tubercle bacilli were found. After treating surgically for some time the patient was lost sight of.

The eleventh case was a girl, nine years old, who had a right lower molar badly decayed, and with a swelling along the lower border of the inferior maxilla. The child had always enjoyed good health. Some two months before that, an enlargement first appeared, and gradually increased, but gave no pain. Tubercle bacilli were found in the *tooth* canal; the tooth was removed, and considerable necrosed bone was found around its roots in which tubercle bacilli were present. After going through a course of surgical treatment the patient was in a few weeks considered well. Two months later she returned with enlarged cervical glands. From this time nothing more was seen of the patient.

Those who have attempted staining for tubercle bacilli know that many slides might be made from a tubercular case without finding the bacillus. And there is no doubt in my mind that in many cases examined by me they were present, because out of the 220 cases examined I can say that there were 174 who, to my mind, were just as likely to be tuberculous as those in whom the tubercle bacilli were found. Many of the cases I saw but once; some I saw several times. Six cases examined had what seemed to be tubercular cervical glands; two cases had pulmonary tuberculosis; the saliva and deposit among the teeth were examined a number of times with negative results. In four of the cases having enlarged lymphatic glands, the teeth were extracted only a short time before the examination. The greater number of the cases in whom tubercle bacilli were found could be classed as subjects of malnutrition or predisposed to the disease. From these investigations we cannot say that all tubercular infection of the cervical lymph glands is by way of decaying teeth; but it has been very suggestive that decaying pulp canals often become tuberculous, and are a ready means of glandular infection, owing to the close anatomic connection of the lymphatics with the teeth and mucous membrane of the mouth. The more I study this subject, the more I am inclined to say, as some one has said, the tubercle bacilli could be found in saliva more times than they are, if only looked for, and especially is this true in mouths with badly decayed teeth.

So far as I know, there has been no bacteriological investiga-

tion along this line. I would say, in conclusion, that an examination, or a more thorough investigation of the conditions under which microörganisms live in the mouth, and what kind of saliva furnishes the best culture media for their development, should be made, for it has been shown by a number of investigators that saliva normal in constituents is a germicide against a great number of bacteria.

Care of the Gum Tissue and Pericementum.*

By A. E. Morey, Ph. B., D. D. S., Chicago, Ill.

These are the nutrient and protective tissues enveloping the roots of teeth and the alveolar processes, and upon their vital condition depends the proper support and usefulness of the human denture.

The subject of pyorrhœa alveolaris is perhaps getting somewhat worn and the nature of this dread disease is pretty well understood, yet it is a typical disease.

There are those who still cling to the theory of constitutional causes and treatments, but I believe a majority of the most experienced operators, while they agree that ANY part of the human frame is more susceptible to attack by disease when the constitutional resistance is below the normal point and that in order to secure a complete recovery in any affected locality the general system must be stimulated to the exercise of its normal functions so that every part may receive its share of the elements for its own support and for rebuilding disorganized tissues, they also agree that THIS is a local plague which must receive primarily thorough local treatment and local medication. Now pyorrhœa alveolaris and all of the kindred forms of disease of the gums and pericementum up to certain limits may be cured—a reattachment of the roots in their sockets may be obtained and the lost gum tissue in most cases restored and reproduced. The number of cases where the restored condition becomes anywhere nearly equal to the original normal condition, I believe to be relatively very few because it cannot be attained so completely in an environment such as is usually present.

Yet such teeth should be saved and cared for in the expert manner and with the thoroughness which may extend their period

*Read before the Chicago Dental Society.

of usefulness as long as possible, and those that are lost or even affected in this way should have their history described to the owners with a moral attached so that farther infection may be promptly held in check. For while a relative cure may be secured in most of these cases, it is much better to prevent disease than to cure it; and all of those conditions under which the gums and pericemental attachments become irritated and disorganized must be prevented so far as possible by those who have these organs under their care, and patients must be instructed to intelligently care for their gums as well as their teeth.

Let us review some of the causes of disorganization of these parts. We may begin with the general statement that all of those pernicious phases of anæmia, especially prominent in city life, are favorable to the inception of diseases of the gums and peridental membrane, because they afford the least resistance to injury and abuse of the parts, and the least recuperative power in aiding the processes of reconstruction. A favorable condition for disease is found in the irregularities of the teeth prohibiting normal mastication; another in the use of soft, finely pulverized and predigested foods which fail to exercise the organs of mastication hard enough or long enough to cause friction upon the gums and pericemental membranes. Such friction not only tends to increase the vitality of the tissues, but also helps to thoroughly polish and cleanse the surfaces of the teeth about the gingival margins where food particles are most likely to decompose and acids generate.

The accretion of serumnal calculus upon the roots of teeth beneath the gums, the separation of the tissues from the roots and the formation of pus pockets, causing further destruction of peri-cementum and even the alveolar process, is the usual history which follows the abuse of these protecting tissues.

One of the common abuses that we notice first is the excessive accumulation of salivary caculus, and dentists certainly abuse their patients when they neglect the thorough cleaning of the teeth.

Too much emphasis cannot be laid upon the importance of taking up this work before proceeding with other operations, except for the relief of pain, and making it the occasion for necessary instruction as regards the aids for prophylaxis and for warning against neglect and against harmful preparations, etc.

Now we may divide most of the causes which irritate or destroy these tissues into two divisions, the first of which may be called

legitimate, or natural causes, and the second, of course, the unnatural ones. Under the first division may be mentioned: *Irregularities of the teeth*, causing malarticulation and *mouth breathing*, which produces an irritation and congestion of the gums; *malposed* third molars, often the cause of destruction of the pericementum upon the distal root of second lower molars; *concussions*, which accidentally destroy pulps, and *again* force septic matter from foul root canals through apical foraminæ, thereby infecting the pericemental tissue and certain tumorous conditions requiring surgical interference.

The foregoing describe a few conditions for which the dentist or stomatologist may not be held responsible. But there is a larger list, making a division of illegitimate and unnatural causes for the disorganization of these protecting tissues of the teeth. Begin with the careless application of arsenic which destroys tissue about the necks of the teeth, or at the apices, or at the bifurcation of roots perhaps extending to complete necrosis, or the careless use of cataphoresis also destroying tissue, or ill fitting bands of crowns and slovenly slippers, or regulating bands with masses of cement beneath the gums and badly tied ligatures, little circlets of rubber dam left at the necks of teeth, wedges of cotton, rubber and wood that press away the gums when illy adjusted and left too long, partial plates and clasps which are a source of irritation bearing upon the gums, badly contoured fillings, allowing the interproximate space to become obliterated and the gum septum crushed out, fillings whose articulating surfaces are inadequately restored, so that they do not articulate at all or if they do they soon assume a tipping position with a consequent irritation of the pericementum, amalgam fillings and others with overlapping edges, incomplete fillings at the gingival borders, the abuse of files and trimmers, badly fitting clamps, and last but not by any means least of all, toothpicks of improper size and shape and stiff toothbrushes with gritty powders and vicious mouth washes. These and many more abuses may cause permanent disorganization of the gums or irritation and death of the peridental membrane, so that the importance of keeping these tissues intact and vital is preëminent.

Calcific Deposits in Pulp Canals.*

By D. A. Hare, D. D. S., Chicago, Ill.

When asked by a member of your committee to read a paper, was much in doubt as to what the subject of that paper should e; and after much hesitation, finally decided to bring up for dis-ussion, the deposit of calcific matter found in the pulp chamber. was partly influenced by the fact that it is a subject which has een little discussed before this society in recent years, and which, o my mind, is one worthy of considerable attention, owing to the act that the formation of so-called pulp nodules is a much more ommon occurrence than is usually imagined, and one which is ften very perplexing to the operator.

All writers seem to agree that the cause of this superfluous eposit is due to some derangement and interruption in the nerve urrents caused by some undue irritation which induces a forma-ion of secondary dentine (for all pulp nodules have the general tructure of dentine). This action brings about a sufficient stimu-ation to the odontoblastic cells to produce the formations we find n the pulp chamber. For the sake of simplifying matters I shall peak of these deposits under two heads, viz., physiological and athological. By the first I mean all formations that are induced y gradual but constant irritation, where nature throws out a pro-ction in the form of secondary dentine, and thus retards the estruction of the pulp, and keeps it in a normal condition for an definite length of time. We all know that in cases where the entine has been worn away by the process of mastication, nature tilizes this irritation to the dental nerve, and a layer of secondary ntine is the result, which develops slowly and in proportion to e wearing away of the dentine. Also in cases of erosion, or here the pulp is being encroached upon by slowly advancing ries, the irritation is sufficient to stimulate greater activity in the rmative cells, and a secondary deposit results. Especially is is true in teeth of dense structure. For in these the breaking own process goes on slowly; whereas in those of poor quality e advancement is so rapid that we have a degeneration and final struction of the pulp resulting. At this juncture I should like mention a point upon which there seems to be a diversity of inion, viz., the capping of exposed or nearly exposed pulps.

*Read before the Chicago Dental Society.

The theory exists among many practitioners, that a layer of secondary dentine is induced by capping an exposed, or nearly exposed pulp, and thereby restoring it to a normal condition. This belief, however, is not shared by Dr. Black. He says in speaking on pulp capping: "Any of the secondary calcific formations within the pulp of the tooth result in exhaustion and final death of the pulp." He also says "Secondary deposits may and do ensure temporary quiet, but so far from ensuring health are they, that, as a matter of fact, they bring about the very state of matters that we most wish to avoid, viz., the degeneration and final destruction of the pulp."

However, it is not the object of this paper to discuss pulp capping. I only wished to mention it under this heading.

By pathological formation I mean all secondary deposits that are induced by some irritation, whether it be from the presence of large metal fillings, especially gold, the jar of clasps attached to plates or the rapid advancement of caries, and which finally result in the destruction of the pulp.

The most common form of this calcification is what is known as pulp stones, or pulp nodules; and it is to the consideration of these that I wish to speak principally. It can readily be inferred from the causes that excite this deposit why they are generally so irregular and structureless in form, often presenting the appearance of a number of nodules bunched together, although occasionally they take the form of the pulp canal itself. I have a case in mind now where I removed the completely calcified pulp from the lingual root of an upper molar.

To diagnose a case for pulp nodules is sometimes a very difficult matter, for there are no distinguishing symptoms accompanying this trouble, and it is sometimes very embarrassing to the operator not to be able to alleviate the suffering of his patient. The pain is generally of a dull, subacute character, and is often mistaken for facial neuralgia. However, it is not periodical, nor of a shooting nature like neuralgic pain, although it often comes in the form of paroxysms. The teeth in these cases present the appearance of perfectly healthy organs, there being no discoloration, no soreness or pressure, and oftentimes no local pain; but the patient is conscious of a constant grumbling, which frequently extends as far as the eye or the ear. The only sure and safe method of diagnosis is by exclusion, and when you have satisfied yourself

that the pain arises from no other source, you can safely attribute it to secondary formations.

The treatment, like the diagnosis, is often very difficult and taxes the skill and patience of the operator, for very often the presence of nodules is not suspected until the pulp is exposed and you find that the arsenious acid has had little or no effect toward devitalization. My mode of treatment in these cases, and one that I have used with success, is as follows:

Supposing, of course, that you have opened into the pulp chamber and discovered the presence of secondary formations, the surrounding tissue being very sensitive, not having been acted upon by the arsenious acid, I first of all insert a pledget of cotton, moistened with a saturated solution of cocaine. Over this is placed a suitably sized piece of vulcanite rubber, and with a gentle pumping motion force the medicament into the pulp chamber for five or ten minutes. This will usually anæsthetize the tissue sufficiently to enable you to open more thoroughly into the chamber, and if you find the deposit movable or floating, it is a simple matter to dislodge it. But in cases where the foreign matter adheres to the dentinal walls and obstructs the entrance into the canals, I saturate a pledget of cotton with fifty per cent sulphuric acid and seal it in the cavity for twenty-four hours. When this has been removed, if the pulp is still sensitive, I use the cocaine solution again, when I can displace the formation without pain to the patient, and with a feeling of thankfulness to myself. The sulphuric acid forms a line of demarkation about the nodule and separates it from the wall of the tooth. The subsequent treatment you are all familiar with.

PROCEEDINGS OF SOCIETIES.

Chicago Dental Society.

Regular meeting held in the Stewart Building, November 1, 1898, the President, Dr. J. E. Hinkins, in the chair.

Dr. G. W. Cook read a paper entitled "Bacteriological Investigation of 220 Mouths, with Especial Reference to Tubercular Infection."

The discussion was opened by Dr. E. L. York.

Dr. York said: I hardly feel competent to discuss such an excellent paper as Dr. Cook has read this evening, but as I am down on the programme to do so, I will do my best. It is a hard paper to discuss, because there is so much in it for thought. There are a few points, however, which the essayist has not made quite clear, but I am sure he will explain them to you later on. I was looking over a résumé of Koch's work on tuberculosis, and he states that he has never found the tubercle bacillus in the saliva of healthy patients. He has never found the tubercle bacillus in saliva unless the person or persons were suffering from tuberculosis. To use his own words: "I have never found the tubercle bacillus in the mouths of healthy persons or those suffering from nontubercular affections, or in any organs or tissues involved in morbid processes of a different character." Here we have it found in tissues in a morbid character in the mouth, in putrescent pulp canals, in which Koch states he has never found it. Dr. Cook also states that he has made cultures of the organisms in the mouth. Some might doubt the statement of the essayist, but knowing Dr. Cook as well as I do, and knowing that he is such a thorough worker, I feel that we should sustain him in the statements made. He is certain that he has found tubercle bacilli in the mouth, and which were growing there. We may find the tubercle bacillus in the mouth, but it may not be alive. I think he will corroborate what I say, that if we take saliva and attempt to grow tubercle bacilli in artificial media we find that we cannot do so, because there are so many other organisms present in the mouth that grow so much more rapidly, that the tubercle bacilli colonies would be choked out. He has undoubtedly taken saliva and inoculated it into susceptible animals and found the tubercle bacillus in pure cultures. This is undoubtedly the way he has done it. He has also found tubercle bacilli in the mouth stained with cover slip prep

arations. Unless we can produce the same organism in susceptible animals, we cannot say it is there. It may be there, but it is dead or in a latent condition. I am sure that Dr. Cook has worked this phase of the subject out very thoroughly. The other means of doing this from saliva is by the Pasteur or Kitasato method, with which he is perfectly familiar.

I have made two or three extracts in detail from some of the works on this subject which were too long to commit to memory. Miller in his work puts the question: "Does the mouth present favorable conditions for the growth of specific excitants of those infectious diseases, tuberculosis, cholera and syphilis? Might it form a breeding place for the specific germs which may enter it from the air, and thus lead to autoinfection?"

Loeffler states that he has found the bacillus of diphtheria in the mouths of healthy children. Dr. Cook has also found it. The occurrence of primary tuberculosis of the oral cavity might justify the hypothesis that the juices of the mouth also furnish the tubercle bacilli with a suitable medium; but tuberculosis also occurs primarily in remote organs as well as in the mouth. Miller also states that the saliva of healthy persons has been examined in vain for the tubercle bacilli; and, as you are aware, these are good men from whom I have quoted. When such men as these have been unable to find the tubercle bacilli in the mouths of healthy persons, and a member of our society has been able to do so through his great energy and perseverance, it is really a great thing for this society. The work, therefore, of Dr. Cook deserves not only our heartiest congratulation for its originality, but it shows also that he is an accomplished bacteriologist and an untiring worker. Unless you have done work of this kind you have very little idea of the time, money and vitality it takes to go through all of these experiments. To-night we have listened to a paper, twenty minutes in length, embodying the results of examinations of two hundred odd mouths. Very few of you, who have not pursued these investigations, can appreciate the amount of work involved. He has given us a contribution which is not only of great value to the dental profession, but also to the medical profession. I feel that he has not only the capacity to make these experiments in a thoroughly reliable manner, but the results of his labors will stand the light of day. When medical men read this paper it will begin to dawn upon them that when they have a

patient with a filthy mouth, with teeth broken down and decayed pulp canals, and there is a possibility of the patient contracting tuberculosis, they will feel it is their duty to send him to a dentist; and when they see that this is the work of a dentist it will impress them favorably with the work that is being done by the dental profession.

Dr. J. E. Hinkins: When I saw my name on the programme to criticise or to discuss this paper, I thought I might be able to find some literature on the subject that I could read up and post myself; but when I came to look the matter up there was not much to read, and knowing that Dr. York was going to open the discussion, I felt that there would be little left for me to say.

I have always been a great admirer of original work, because there is no man or class of men who can do pure original work without expending a great deal of time and money, that is, if one considers his time money. It so happens that for years Dr. Cook and I had an office together, and at the time he commenced this work, to my knowledge he spent three afternoons a week for two or three years in the laboratory at the Mercy Hospital, working with Dr. Stanly P. Black. You can therefore get a fair idea of the amount of work that he has put in on this paper. I regret that I cannot discuss it intelligently. I have been disappointed, in looking over the audience to-night, in not seeing our friend Dr. G. V. Black here, because he has done considerable work in regard to the bacteria that are found in the mouth, particularly the leptothrix buccalis maximus and leptothrix innominata. I am somewhat disappointed that Dr. Cook has not found more of these two—leptothrix buccalis maximus and leptothrix innominata. I do not see that he has made any record of these at all.

Dr. Cook has done a great work with reference to the diphtheria bacteria and the pseudo-diphtheria bacteria. It is only quite recently that I knew the difference between the two. He mentioned it in his paper, but I do not think he pointed out the difference very clearly between these two germs. One germ is quite pathogenic, the other is not. I was disappointed in regard to this feature of the paper. So with the pus forming bacteria. I find he has made little mention of the streptococcus which Dr. G. V. Black has found in almost every mouth. I believe he has found it in eighty or ninety per cent of the cases he has examined. I would like to discuss the paper further, but I do not feel compe

ent to do so because I am not up on this work. I can only appre-
iate what Dr. Cook has done, and for scientific purposes I hope
ie will continue this work.

Dr. J. H. Woolley: I am not going to discuss the paper, but
ve have with us to-night a gentleman who in the past was on the
ther side of the question of bacteriology. I refer to Dr. Baldwin.
I would like to have him speak on the subject of bacteria if he will
lo so, and discuss the paper of Dr. Cook.

Dr. A. E. Baldwin: I do not exactly understand what Dr.
Woolley means. I know very little about the subject of bacteri-
ology from an experimental standpoint. However, it is a subject
hat cannot fail to interest any dentist or any professional man who
s interested in any branch of medicine. I came here to listen to
hese papers, and not to speak on them, because I realize that
here are others here more competent to discuss the papers than
nyself, as I have done very little of what may be called original
work. I know nothing of the amount of work involved in the
preparation of such a paper as this, but I feel that our society
ought to thank Dr. Cook for his valuable contribution. I trust the
gentleman will not take it amiss if I say this, in a general way without
ny special reference to his paper, that we ought to weigh with care
he premises as well as conclusions. In any scientific discussion
t will not do for us to take the word of any one without it is borne
ut by correlated facts. Why? Because any of us who are
eaders and thinkers (I fear there are too many of us who are not)
vill find authorities for almost any statement made in regard to the
ubject of bacteriology.

Having been a practitioner of general medicine for a number
f years, I have been especially interested in the subject of tuber-
ulosis—that insidious and hidden disease, oftentimes sapping the
ife of the individual long before it is recognized even by careful
nedical men. I say even by careful medical men advisedly, as I
hink there are a great many cases that are overlooked by people
vho make cultures of bacteria, etc., and they overlook the disease.
When one realizes that tuberculosis invades all, or nearly all, of the
rgans in the body, he realizes how far reaching it may be and how
difficult it is sometimes to recognize it. The disease is sometimes
ocated where it is almost impossible to get any culture of it. There
s no one who will deny that Koch did a great thing for humanity
vhen he discovered the tubercle bacillus and published, some

sixteen years ago, the results of his investigations. But the statements he made then in connection with tuberculosis have since been modified materially by others and by himself.

I would like to have the reader of the paper, when he closes the discussion, tell us whether the tubercle bacilli were found in any other part of the body other than the mouth, the cavities in the teeth, or in the root canals. I would like him to state why he speaks so positively that there were not tubercle bacilli present anywhere else. Although I have not made any investigations along this line, I should hesitate a long time, if I found tubercle bacilli in no other portion of the body than the mouth, before making such positive statements. We are led to believe from the paper that the mouth was the only place in which these tubercle bacilli were found. I think it is only found there as an extraneous germ, just as it may so happen that the tubercle bacilli may be found in the mouth of any one in this room if there is any dust and he has kept his mouth open. The habitat of the tubercle bacillus is not in the mouth, except in cases where there are other abnormal conditions, and then it is a result, and not a cause.

As I have previously said, I came here to listen to the paper and to hear the discussion of others rather than to participate in it myself. I do not know why Dr. Woolley introduced me in the way he did; but I believe in the principle of thinking before you swallow, and I presume that has given me the name that Dr. Woolley gave me. I do not swallow all that has been said in regard to bacteriology. I am free to say that some things I doubted years ago I do not doubt now; many things I doubted several years ago I doubt more than ever; a great many things I believed several years ago I do not believe now. If anybody asks me a question he will get my honest opinion, and without any discourtesy to any one, I feel that we as professional people ought to do a great deal more thinking. Think ten times as much as we talk; read carefully and weigh what we read. Our specialty is given too much to allowing somebody else to do the thinking and we to the practice of bolus swallowing.

Dr. TRUMAN W. BROPHY: I have only a word or two to say, and I will try to make myself clear. It has a practical bearing on this paper and concerns every dentist. Dr. Cook has shown us that the pathogenic bacteria gather about the necks of teeth and upon the sides of them in certain locations and exist there, and

what I wish to say is this: We must keep in mind the necessity all the time of antiseptic cleanliness in our operations. The rubber dam, the instruments, everything that we use should be sterilized after they are used. If it is possible, as was shown by the use of the hypodermic needle, to infect a patient as he described, how careful we must be in the use and sterilization of our instruments. Carelessness in this regard may carry infectious disease from one patient to another. That is all I have to say except to compliment the doctor on his most excellent paper, and I really believe that it is a contribution which will do more toward elevating the Chicago Dental Society in the estimation of scientific men throughout the world than any paper that has been presented to it for a long time.

Dr. C. F. HARTT: I wish to cite briefly a case which bears out the remarks just made by Dr. Brophy. A dentist some years ago extracted a tooth for a little girl, shortly after which the child came down with diphtheria, and the diphtheritic membrane formed in the socket where the tooth had been removed. On investigation it was found that he had removed a tooth for a young girl who had just recovered from diphtheria, and it is believed that the disease was transmitted in this way. He did not sterilize his instrument.

Dr. TRUMAN W. BROPHY: May I add another word to my previous remarks in regard to the use of the hypodermic needle? My experience has been that many cases of infectious diseases are contracted through the use of unclean instruments. It is the practice among certain establishments in the city of Chicago, claiming to be dental establishments, to use the hypodermic syringe extensively in injecting cocaine into the tissues to obtund sensitiveness to extract teeth, and I am satisfied that that practice is doing more harm than any one will ever tell. It is leading to disease of the parts, necrosis, general infection, in scores of cases in this city right along. I have many patients under observation that have come from these places that have carried infectious diseases from one person to another. I make this statement advisedly. I want to go on record as saying that this condition of things exists, and unless the Illinois State Board of Dental Examiners can do something to suppress it, it should go into the hands of the Illinois State Board of Health, because it is the duty of this body to protect the people. We have no quarantine to protect the people from becoming infected with smallpox, etc., and as infection has been carried through the careless use of the hypodermic needle, and this practice has grown to such an extent, it is about time to call a halt.

Dr. C. F. Hartt: I would not like it to go out that dentists are the only ones who are guilty in this matter. I know a gentleman who took his wife, a beautiful woman, to a physician to be vaccinated, and he gave her syphilis. It ruined the woman and her family forever, simply because he did not sterilize his instrument. Dr. J. B. Murphy, of this city, took care of both of the patients whose cases I have cited to-night, and I can prove what I say.

Dr. A. E. Baldwin: The society will pardon me for speaking again, but when a statement is made like the last one by Dr. Hartt, I feel like taking the floor. With all due deference to Dr. Hartt, I do not believe that syphilis was carried in that way. Syphilis is not a disease passing around in such a manner so easily. I should discredit the statement. I do not want to be placed on record as saying that it is not a possibility, but I should hesitate before making a statement like that before a professional society, because there are a great many things to be considered. Many times physicians are blamed in this way when they are blameless. I think it hardly a possibility for a physician to convey syphilis in vaccinating. Of course, such a thing would be possible if the physician took his instrument, dipped it in the virus of syphilis, and then used it as vaccina virus. But those things are not probable. We are too narrow in our sphere and are too prone to throw stones at the medical men. It is almost proverbial in dental societies to hear some one say something about the ignorance or carelessness of the general practitioner, and that the doctor's knowledge is nothing to be compared with that of the dentist.

Dr. Hartt: May I ask Dr. Baldwin a question? Why is not a physician just as liable to transmit disease with an instrument that has not been sterilized as the dentist? I can prove the statements I make. I presume that Dr. Murphy stands high in the profession in this city, and there is no doubt but what the physician who vaccinated this woman with an unclean instrument gave her syphilis.

Dr. Baldwin: For the simple reason that the dentist works in the mouth, or he is supposed to. The mouth is one of the ripest fields for the conveyance of any trouble we can have. In vaccination a physician does not vaccinate in the mouth, but he usually vaccinates a person on the arm or leg, and usually the skin is in a healthy condition. I know of people infected with syphilis who had pretty healthy skin on their legs and arms. That is the reason

why. Dentists work in a field that is very easily infected; they work in a field that is sensitive; and there are lesions more or less common in the mouth when there are no lesions elsewhere. But I do not think the dentist should be more careful than the doctor; he should be just as careful as the doctor, and the doctor just as careful as the dentist, and we all ought to be just as careful as we can.

Dr. Cook (closing the discussion): I feel very grateful for the compliments of the gentlemen who have spoken on the subject. With reference to the questions that have been asked in regard to this work and as to the statistics, it would be impossible for me to go into anything like detailed account of them. Dr. York spoke of the researches of Koch and Miller with reference to tubercle bacilli in the mouth. A great number of references are found in surgical literature in regard to tuberculosis of the sublingual glands, and a number of writers have reported cases of tuberculosis of these glands, and have stated that possibly the infection might have taken place through badly decayed teeth. I do not know that I have seen any literature where any one has gone into the pulp canals of teeth, cleaning them out, and following them up as systematically as they could in dispensary work, as most of this work is done. There is no question in my mind but what anybody could have done the same work if he had devoted the time to it. This investigation has taken three years, and the cultures made by different methods consisted of between three and four thousand plate cultures. Those who have grown any bacteria know that it takes much time and work to do it.

Dr. Hinkins said he felt a little disappointed because I did not speak of some of the mouth bacteria other than the tubercle bacilli. I could not go into the details of that subject, and it has been dwelt upon quite exhaustively by several writers. I simply alluded to it to show that other work has been done than simply searching for tubercle bacilli. The growth and development of the leptothrix is a subject that is puzzling the best bacteriologists of the world to-day. They are grouped in about five different classes, and some groups have not been grown at all. Bacteriologists have found no satisfaction in trying to cultivate and experiment with them.

The matter of infection brings up a great question, particularly infection by way of the saliva. If you take healthy saliva and inject it into guinea pigs and rabbits, as many experimenters have done, you will find that most all of these rabbits would die from

micrococcus of sputum septicæmia, described by writers on the subject. But the growth and development of different micro-organisms constitute a great subject, and injection is the only way we can determine their virulence. The streptococcus pyogenes albus and aureus, which is considered one of the most common pus forming microörganisms, has been proven very conclusively that when grown in the saliva they are not infectious. Marmore, Kolle, Widal and Byancon were the ones who experimented considerably with the streptococcus, in and out of saliva. I think they gave them two names—streptococcus brevis and the streptococcus longus. They determined the virulence of the streptococcus longus in the mouth by cultivating it in bouillon cultures and by inoculation experiments, and also by the way it grew and looked in the cultures. The streptococcus longus produced a granular appearance in the culture medium, while the streptococcus brevis simply presented flocculent deposit, and they claimed that the streptococcus in no case found in the saliva was at any time virulent.

Dr. Hinkins brought up the point with reference to the diphtheria bacillus and the bacillus of pseudo-diphtheria. This question has been studied a great deal, and the differential diagnosis between the two is very important. Neisser has established a double staining process by which he has determined that the true Klebs-Loeffler bacillus has a granular appearance, and by double staining he finds that in all cases they reacted to this, while in the case of the pseudo-diphtheria bacillus they did not. Another method was that of putting them in cultures by which he determined that the true diphtheria bacillus produced an acid, while the culture medium in which the pseudo-diphtheria bacillus is put remains either neutral or is slightly alkaline. And then the other method was by inoculation.

With reference to the remarks of Dr. Brophy, I think he mis understood the statement I made in the paper as regards the use of the hypodermic needle. I do not know whether the patient was infected with the hypodermic needle or not; but he already had gonorrhœal infection of the urethra, and in talking over the matter with him, he was rather inclined to think he had infected himself. At the point where the needle was introduced it was small enough to retain the germ in a pocket or in the wound produced by the needle; while if it had been where a tooth was extracted, the infection, or germs, would have been washed away by the saliva and they would

ot have had a suitable soil for their growth and development. I emember seeing some twenty-eight cases in dispensary work that vere operated upon on account of infection evidently from un-terilized or unclean needles used by persons in injecting drugs nto the gums.

The point raised by Dr. Baldwin with reference to the tuber-le bacilli being found in the saliva and no where else, I do not wish o state positively that this was the only place where the patient had ubercular foci. So far as casual examination went some of the ases did not show any tubercular condition. Dr. Baldwin stated hat it was hard to recognize the disease until it has made suffi-ient inroads into the system of the patient; that the tubercle acilli might be floating in the blood channels, for that matter, nder certain conditions. The condition of the patient is the nain point for infection. If the saliva is in a certain condition, here is no reason why tubercular infection may not take place as well in the mouth as elsewhere; and the remarks made in the atter part of the paper were, that it is not a matter of finding erms in the mouth, but it was finding out the conditions under which they existed in the mouth. That is the first point to be onsidered and thoroughly investigated in determining anything lefinite about it.

Nobody, as far as I know, has done much work with reference o determining the pathological conditions of saliva, and what kind of aliva makes the very best culture medium for the development of ifferent kinds of germs. The saliva changes very materially from ay to day, and we may find different kinds of bacteria at different mes. In my examinations and experimental work for seventeen ays in succession, cultures and microscopic slides were made om the saliva from the same person, which showed different inds of bacteria in the mouth each day. It is well known that the aliva is germicidal in most cases. There is no place in the human ody where wounds heal more readily than they do in the mouth, nd if the conditions are such a person may be perfectly immune o invasion of microörganisms; but if the vitality of the patient is owered in any way, the saliva is materially changed very quickly, nd the conditions of the bacteria in that saliva are different in the ourse of twelve or twenty-four hours.

I think I made it clear in my paper that all of the subjects xamined in which tubercle bacilli were found were cases of

malnutrition, consequently there was a suitable soil for tubercl infection to take place in two or three cases where the glands were enlarged. The first appearance of the enlargement was under the roots of the teeth, and as the infection progressed it went down the neck, showing that the infection came from the teeth. In most cases where the glands of the neck become infected with tubercu losis, it nearly always took place lower down. In some it occurred near the clavicle. It was more frequently found there than in other parts of the neck. The reason I was positive in my opinion that tubercular infection had taken place through the teeth was because the infection appeared near there. Those glands were the first to be infected.

Again, I desire to thank the various members for the compli ments I have received for contributing this paper.

Dr. B. J. CIGRAND exhibited a case of malocclusion and a very typical case of irregularity. The man was forty-four years of age a Swede, and the teeth give no trouble while he is masticating The teeth are badly worn down and decidedly irregular. Dr Angle and others who have seen the case pronounce it one of th worst cases of irregularity they have ever seen.

Dr. A. E. MOREY read a paper entitled "Care of the Gum Tis sue and Pericementum."

The discussion was opened by Dr. C. N. THOMPSON, who said I have been greatly pleased with Dr. Morey's paper, and wha little I have to say I shall confine myself to emphasizing what h has already said relative to carelessness of fitting crowns, bridge and plates. We have heard no end of discussion relative to th preservation of the interproximal space. I am a strong believe in it. We have heard little or nothing relative to the shape o restoration of the buccal and lingual surfaces of teeth in makin crowns and bridges. I believe that it is just as necessary to pr serve or restore the natural buccal or lingual formation of molar and bicupids, in order to preserve the gum tissue, as it is to preserv the interproximal space. If we will look at a cross section of lower molar, for instance, giving us the outline of the buccal an lingual spaces, we will notice that the contour is very heavy ju above the gum line, both on the lingual (principally on the bucca and buccal surfaces, which affords protection to the gum, and th food in its excursion over the tooth, while it presses upon the sid of the teeth, it will escape pressing the gum from the neck. I

forming crowns I consider this one of the essentials, especially of the shell crown.

In speaking of lower plates, where there is nothing remaining on the six anterior teeth we generally find tartar accumulated there; after the removal of this, which is generally done before an impression is taken, we may have to fill the space that was occupied by the calculus, and the portion of the plate bearing upon that portion of the tooth is not fitted to stand wear. If, therefore, that part can be cut away, or before the plate is vulcanized the tooth could be built up so that the gum tissue can be removed, following out the idea that Dr. Carpenter gave us in his method of gum restoration, we could have the gum rest upon the enamel of the tooth and have a chance for gum restoration under the plate.

Relative to clasps that go under the gum, the same care should be taken there as in the formation of the buccal and lingual sides of the crown.

Dr. L. H. Arnold: There is one thing that Dr. Morey stated in his paper that I want to take exception to, and I refer particularly to the use of a stiff brush and gritty powders. That particular point has been of interest to me for some time, for the reason that I know a great many dentists who hold the same idea. If we stop to think for a moment that we are given teeth to chew grain with and not soft food (of which we are using a great deal). All of our food is entirely too finely triturated before taking into the mouth and we do not get nearly enough friction on the gums. He says that we should use a soft brush if we want to get the gums in a normal condition. I do not think this is true. If we wish to keep them in a normal condition a stiff brush is the only thing that will do it. To preserve the membrane around the root of a tooth in the interproximal spaces, we must have something that can be carried between the teeth to clean them. A soft brush will not do that. In striking the gum a soft brush will double over, consequently we should use a stiff brush. For several years I have used pulverized pumice stone on my own teeth, and I have also for the last three years recommended its use to my patients, and I see no legitimate objection to the use of a stiff brush or to gritty powder.

Dr. Edmund Noyes: I should hesitate very much, in view of my observations, to advise the average patient to brush teeth twice daily with pumice stone. I am in the habit of telling my patients that they must rely on friction to keep the teeth clean, and that

the problem is to use friction enough to keep them clean and not enough to wear them out. I have seen numerous cases in which the teeth have been furrowed by the friction of the tooth brush to such an extent that we had to restore the lost substance with fillings. There is, therefore, a definite danger of overfriction. If you will notice how completely a silver teaspoon can be worn out in the course of a woman's long life by the everyday scouring of it with whiting or the ordinary means which are used to keep it bright, it will not seem incredible to you that even hard teeth, in the course of sixty or seventy-five years of brushing them regularly twice daily, may be worn badly, if reasonable discretion is not used as to the severity of the friction put upon them.

Dr. J. N. Crouse: I dislike to see so important a subject pass without more interest being shown, for it concerns the most difficult problem the dental profession has to meet—the treatment of the peridental membrane where diseased, and securing comfort for that numerous class of patients who are so unfortunate as to be afflicted with this ailment. I do not think any advanced case of true pyorrhœa alveolaris is ever cured, except in the talk of enthusiastic gentlemen. When we come down to the real facts we find it is necessary to treat patients afflicted with pyorrhœa all the time, and they must be constantly under our care. I refer now to cases of true pyorrhœa where we have extensive sanguineous deposits and pus accumulations around the roots of the teeth. You may treat a case with this form of the disease with apparent success for a while, and dismiss your patient; but before long he will come to you with a recurrence of the trouble. That has been my experience, and I will venture to say it is the experience of those who have watched their cases carefully and tell the truth about them. There is nothing so fatiguing, so uncertain and so unsatisfactory to me as the treatment of pyorrhœa; and I think it is a great mistake for any of us to tell patients with advanced cases that we can cure them. I have had patients with this disease under my care for fully twenty-five years, and they have had more or less trouble all the time. I have been treating them, and I do not know whether it was wise or not to advise them to keep up treatment. It is true that their teeth have been reasonably comfortable, but the fact that these cases are not and never will be cured worries me considerably. I am speaking now of the severe and more aggravated forms of pyorrhœa, where large pus pockets form. There

s another form of the disease, where we have a gradual wasting away of the sockets of the teeth, and the gums as well. It must be remembered that the gums do not waste away first, but the sockets of the teeth, and then the gums recede. In many severe cases I have kept up constant treatment, and in spite of it the teeth have gradually become loosened, until they could be easily removed with the fingers. I have never removed one of these teeth without feeling, after examining it carefully, how utterly impossible it is to effect a cure.

Dr. Morey spoke about repair of the interproximal space. There are many mouths that are absolutely uncomfortable, because the patients suffer every time they eat a meal from the wedging of fragments into the spaces between the teeth. The gum tissue is gradually driven away, the alveolar process more or less destroyed, and there is irritation every time the patient eats. It is a great problem in dentistry, requiring much skill, to restore the contour and put the chewing surface in such a condition that food does not wedge between the teeth.

Dr. S. G. Perry, of New York, read a paper recently on the care of the cervical margin, in which he discussed the interproximal surface, but more particularly with reference to the treatment of the cervical margin in filling. He recommended what has been a great source of satisfaction to me, namely, the matrix where we are contouring. I wedge first, but he said he did not rely so much on separators now. I like plenty of space; make my matrix of such a shape that it fits accurately at the cervical margin; then I fill in my gold carefully against the matrix, so that when through there is not much finishing necessary. In this manner we will not create irritation at the cervical margin in finishing, which is bad. I can so shape a matrix that there need not be much cutting in finishing at the cervical margin. Where you adopt the other method of building out and having to shape afterward, it is a difficult operation, and two or three hours are necessary to finish such a filling properly, if you attempt to do it without a matrix. I would therefore rather take half an hour to put on a matrix and save an hour in filling.

Dr. C. F. Hartt: In connection with this discussion, I wish to say that the matrix Dr. T. W. Brophy gave to the world is the best that has ever been put on the market, and I have the honor of being the man to show the dental profession how to use it. There

is only one way to use it. After adjusting the matrix properly, pack softened modeling compound between the teeth, using cold air syringe to hasten its hardening. A matrix secured in this manner never gets out of place.

Dr. C. N. Johnson: I have been greatly encouraged in the last five minutes, after listening to the remarks of Dr. Crouse. It has taken him fifteen years to get to the point where he claims now to be regarding the use of the matrix, and he has certainly struck the keynote of the advantage of the matrix. The matrix question is not up for discussion, but I will refer to it incidentally. A few years ago, when I was young and just starting to speak in dental societies, Dr. Crouse nearly annihilated me before the State society for advocating the matrix. I am now perfectly delighted to see that he has changed his opinion. He has stated in a few words the benefit that we get from it.

I remember very distinctly talking with an old dentist several years ago about trimming fillings down in the interproximal space. He did not believe in the use of a matrix, and in order to be assured of perfect adaptation of his material over the cervical margin he necessarily had to build an excess, as every operator must if he does not use a matrix. The question came up as to the trimming of fillings, and I soon learned that he put in more time in trimming his fillings after they were inserted than it should take to do the whole operation. He said, "What do you use in trimming your fillings?" I told him that I ordinarily used narrow strips in trimming in that locality. "Yes," said he, "you use strips to polish them, but how do you dress them to form?" I told him that when I got my filling condensed it was usually of the desired form, and so it is if a matrix is used properly. The filling needs very little trimming and it is a matter of only a few minutes to finish these fillings on the proximal surface.

In regard to the subject of care of the gum tissue, especially in the interproximal space, this paper opens up a broad field for discussion. This question is one of very great importance. I have found this, that if in the insertion of proximal fillings we are careful not to lacerate the gum, particularly in the interproximal space, keep it out of the way of files or disks, or whatever is used, the gum will reoccupy that space in the normal condition after the operation, provided the filling is inserted properly and the margins left smooth. I take issue somewhat with Dr. Perr

when he objects to carrying the cervical border of the cavity under the gum line. I have a theory that if we carry the cervical margin of fillings under the gum line and finish them in a perfect manner and allow the gum to cover the filling, not only will the filling be safer, but the gum will cover the smooth filling and remain in a healthy condition.

Dr. A. W. HARLAN: The paper is primarily devoted to the care of the gum tissue and pericementum, and I thought when Dr. Morey was reading it that if anybody would invent a panacea for keeping the bony socket in shape, I would take care of the gum all right. That is what troubles me most. It is the disappearance, the melting down and washing away of the bony socket in these cases; and if there is any process of cleaning, or of bathing, or of drinking water, or anything like that, which will have a tendency to check it, I would like to know what it is. It is especially true in the mouths of men and women who are fifty, fifty-five or sixty years of age. They may have gone along until they are fifty years of age and not have had much care of the teeth. Their teeth may nearly all be saved, and all of a sudden they notice that the ends of the teeth are worn off, and presently, perhaps, the third molar, the second molar and first molar, one by one, are loosened, and they are loosened almost in pairs, or in fours, if there are that many teeth, and the sockets waste away one by one. They seem to be in reasonably good health, but it is nevertheless true that no amount of banding of these teeth with gold, platinum or silver bands will prevent the bony tissue from disappearing. It is not in the mouths of young people that we have much trouble, but it is in the mouths of persons fifty, sixty and sixty-five years of age. Again, take the inferior incisors. They may go along thirty-five or forty years in persons of robust habits, who are more or less engaged in sedentary occupations, without causing much trouble. Perhaps in people who eat too much meat, who follow sedentary occupations, and take too little exercise, you have a sudden eruption around one or two teeth, and before you know it the bony socket is gone, and that is another case where you can, perhaps, predict a longer life of usefulness by banding teeth and holding them immovably; but it is absolutely impossible to reproduce the bony socket. In those cases generally the gum is not retracted; it does not disappear to any considerable extent; but there is a continual volume of pus that is pouring out which no

amount of sulphuric acid or any other acid will permanently check. If you have your patient go to the seaside or one of the springs where he or she, as the case may be, can drink copiously of water, and refrain from heavy drinking, they are much benefited. The absolute inefficiency of any local or systemic medication is very apparent in such cases.

Dr. J. G. Reid: There is one point that was not mentioned in the paper in reference to injury to gum tissue, and that is the wooden toothpick. I believe it does more damage to gum tissue than almost any other one thing. People who use large wooden toothpicks, improperly prepared, are troubled in the manner described this evening. They are constantly using these toothpicks. They become habituated to their use, and very frequently toothpicks are used when there is really nothing to pick.

Dr. E. R. Carpenter: Along the line of the remarks made by Dr. Reid, I wish to relate an experience of my own with wooden toothpicks. I was an habitué of the wooden toothpick for two or three years, and as Dr. Reid has said, I would frequently use a toothpick when there was really nothing to pick, and ultimately I had considerable trouble with a first superior molar that none of my professors at college seemed to be able to understand. It was thought to be neuralgic in its tendency, and yet they could not locate it. I suffered the torments of the damned for about six months. Finally I went to New York city on a vacation, consulted the late Dr. William H. Atkinson. The first thing he did was to take an exploring instrument and pass around the gingival margins of the molar in question. He discovered what felt like the end of a little toothpick, wedged in between the socket and anterior buccal root of the molar. After a preliminary treatment for a couple of days, he trimmed down the rough edges of the socket with a new bur in the dental engine, and diagnosed my case as necrosis of the socket; but periosteal inflammation was so great that I ultimately lost the tooth.

Dr. Younger: I was very much interested in the paper of Dr. Morey, on the care of the gum tissue and pericementum, but I rise more particularly to refute what has been said by Dr. Crouse, to the effect that pyorrhœa alveolaris cannot be cured. It is cured I have been treating this disease for nearly thirty years, and I know what I am talking about. I have cured thousands of cases. There is a difference in cases of pyorrhœa. In one case the deposit comes

from the alveolar process itself, a condition described so nicely by Dr. Harlan. It is a solution of the alveolar process and there is a deposit upon the walls of the roots. Where a septum has disappeared you will find a change in form over the roots of the teeth. This is true pyorrhœa and ought to be checked. If the dentist cannot act intelligently in these cases, he should consult some one who knows how to handle them. I do not wish the impression to go out from the remarks of Dr. Crouse that pyorrhœa cannot be cured. It has been cured; it is being cured. Dr. Good has cured these cases himself, as well as many other dentists.

Dr. Elgin MaWhinney: Judging from the discussion, there is some doubt as to what we call a cure. If a man is sick from any particular disease, is treated, the symptoms disappear and he recovers his health, I should pronounce him cured. However, if the disease breaks out again at some time, is it evidence that he was not cured. I have had probably as many cases of pyorrhœa alveolaris to treat as the average young dentist, and I think this case will typically express nearly all of them. A lady, fifty years of age, came under my care about five years ago, in which the two superior central incisors were loose and had separated. A bicuspid on the right side was loose and I first thought of taking it out. A lower second molar on the same side was loose, and I thought of taking it out. On the other side of the mouth there were three teeth, a first molar, second and first bicuspid, that were in the same condition. Pus was oozing from them. The roots were covered on some part of their surfaces with a hard deposit. She was an out of town patient. I had her remain in the city for a month. I worked on her teeth faithfully during that time, doing the best I could for her. I presume it took me two hours to clean one of those teeth. I have kept track of this woman for five years, and she was in my office about ten days ago. She comes to me three times a year to have her mouth examined and her teeth cleaned. During the last year and a half she has passed through a very trying ordeal. Her physical condition is at a low ebb. These teeth are still firm and there is no external appearance of pus. The space between the teeth is practically closed; the gum looks natural, and I might say that the spaces are filled in with gum tissue normally. I do not know whether you would call such a case cured or not. Personally, I call it a cure. Perhaps I should wait ten or twenty years to see if the trouble returns before pronouncing a cure.

There are many other cases that I could narrate along this line, but I think this one will suffice.

Dr. Truman W. Brophy. I have in mind many cases of pyorrhœa alveolaris that I have cured. I do not think it is such a mysterious condition of things. A chronic inflammation about the necks of teeth, about the alveolar process, or about the cementum, does not differ very materially in its pathology from similar conditions encountered in other parts of the body. The same kind of treatment employed in curing an abscess or a cyst in other parts of the body will cure a case of pyorrhœa. We sometimes find the peridental membrane very much thickened, pus is being secreted, and what we need to do is to freshen the tissue a little, get rid of the deposit and inflammation by stimulating the parts, getting new tissue formed as far as we can. I have never regarded pyorrhœa such a mysterious disease that only a few specially ordained could cure. The treatment first proposed by Dr. Riggs stands as good to-day as it did then; that is, remove the necrotic parts of the alveolar process, stimulate the parts, and sustain the teeth while the healing process is going on. When the alveolar processes are gone, the teeth are gone, and it is absolutely futile for any one to try to keep them there. For some special reason the teeth may be ligated and supported in order to be kept in place, but this will be only for temporary purposes. Dr. MaWhinney has told us that he spent two hours on one tooth in removing the deposit. This simply shows what can be done with care and patience. I hold that when a disease is arrested and the parts restored to their normal condition, the patient is cured.

Dr. A. E. Baldwin: We are all interested in this subject, and I do not think there is such a difference of opinion as there seems to be. It has been claimed that some cases of pyorrhœa alveolaris cannot be cured. I think we all believe that, even if we do not say it. But there are cases where there is a deposit around the teeth, and if we can remove this foreign substance and get the parts in a healthy condition, as Dr. Brophy has said, there is no question but what such a case is cured. Dr. MaWhinney raised the important question as to what constitutes a cure. I am fairly careful in my treatment, but I must say that I have not been as successful as I would like to be in the treatment of these cases. Take, for instance, the first permanent lower molar, where the roots are not only covered on the mesial and distal sides with the

eposit, extending up into the bifurcation, and I am willing to dmit that I am not capable of removing such deposits. I think ve are too prone, after treating one or two cases of any particular isease successfully, to put our fingers in our armpits and say, "We have hit it," only to find our error when handling a subsequent case unsuccessfully. A statement is one thing, a cure is nother. The fact that any one man cures the majority of cases hat come to him shows that he is skillful and discriminating. Some of us may be more skillful than others. When a man says hat he cures all cases of pyorrhœa, he is simply talking. If we vere a little more careful in our statements we would get a little loser together; there would be less apparent disagreement. The reat trouble with us as professional men is that we are too careless n our acts and in our statements. Statements have been made o-night that show a most unscientific view of this subject. It ould not be true and physiology be physiology, histology be hisology, and pathology be pathology. Of course, it may be they re all wrong, but it does not seem credible to think so. If we vere to make a careful study of this disease, treat it very carefully, nake very few promises, and be as clean as possible in our work nd thorough in what we do, we will probably be more successful han we are. But a great many cases we will have to pass on.

Dr. Morey (closing the discussion): I have not much to say, ut simply wished to throw out suggestions for preserving and eeping these tissues in good condition.

With reference to the remarks made by Dr. Arnold, as to the se of the stiff toothbrush, I do not advocate a soft toothbrush, s he intimated, but a moderately stiff one. There is such a thing s a toothbrush being too stiff for childen and for indiscriminate use.

December Meeting.

Dr. D. A. Hare read a paper on "Deposits of Calcific Matter n the Pulp Cavity."

DISCUSSION.

Dr. D. C. Bacon: I had not expected to open the discussion n this paper, and I hardly feel prepared to discuss it, but the subct is of vital interest to us all, no doubt, though I must say that am densely ignorant on the scientific points in this matter. I ave come across quite a number of such cases in my practice, but have had no regular method of treatment, no regular method of iagnosis.

One point that the essayist makes in his paper is about the causation of nodules. I had been led to believe that the cause of the formation of pulp nodules was some continued irritation to the pulp, but my experience has been to disprove that theory. I have noted down a case that I had in practice: Mrs. M., a patient twenty-five years old. She first came to me in June, 1895, and was troubled with what I supposed was trouble from a carious tooth. I filled the tooth but the trouble continued. I then found by diagnosis by exclusion that the trouble was with the second molar on the same side as the first molar that I had filled. There was nothing shown in the way of decay, but after a considerable time I made up my mind that I would have to open into it, and I found that it had nodules. I treated the tooth and filled it. In less than a year, in March, 1896, she had similar trouble on the other side and there seemed to be nothing wrong, no caries, erosion or abrasion, nothing the matter with the tooth externally, but finally I opened it and found the same trouble. I have since that time opened three more, all of them molars, and have found in each case pulp nodules. They have been very difficult to diagnose and there seemed to be nothing externally to show that there was anything wrong with the tooth and I can give no reason for it. The theory that it is caused by some continued external irritation does not seem to fit in this case. I have never found pulp nodules in the incisors that I remember; the bicuspids and molars I have found trouble with.

Dr. F. N. Brown: I do not know that I have anything to add to what has been said in regard to this paper. The essayist divides the deposit of calcific matter in the pulp chamber into two heads the physiological and the pathological. Now, in the first place, I have found that the capping of the pulp very frequently results in the deposit of secondary dentine that not only gives us good results in after filling, but we have no irritation; there is no irritation to the pulp any more than we would find irritation in a pulp where the deposit had taken place by, we will say, the physiological conditions, or by the wearing away of the teeth and nature protecting the encroachment upon the pulp. So I am inclined to believe that we can get results there quite as readily and as satisfactorily as nature gives us in the first place, or physiological conditions.

In the next place, the essayist says there is no change in the color of the teeth—in the texture of the teeth. Well, I do not

now whether he means in both classes, that there is no color, say
the first or the second. I have noticed a good deal of change
the color of a tooth. If you will take the mouth of a patient of
iddle age, or past middle age, you will find that where the pulp
amber is filled with secondary deposit, calcific matter, that the
oth is badly discolored, very readily perceptible to only a casual
bserver.

You will also notice that in drilling into the tooth that the pulp
hamber may be entirely filled with calcific deposit and the nerve
ay be still alive, and if you wish to devitalize it—touching upon
nother point in the paper—that he found it very difficult to
evitalize a tooth with pulp stone. I do not find that is true, and
rilling through the enamel until you reach the dentine, it is a very
asy matter, by a slight application of arsenious acid, to devitalize
ne tooth. The fact of the matter is, if we wish to devitalize the
oth without great pain, we should put the arsenic as far back
om the pulp as possible anyway, and if it is true that the calcific
eposit is due to an increased circulation in the tooth, we have the
rculation there to absorb the arsenious acid.

I will say, however, that I am not prepared to discuss the
aper. In the first place, I have been very busy and have not
ven it much thought; but as the paper was read those ideas pre-
nted themselves to my mind. And in removing the pulp nodules
do not think that sulphuric acid would be beneficial. I find that
requires the use of a dental engine and a bur. So far as the
persensitive condition is concerned, I think sulphuric acid might
move the sensitiveness, but otherwise I do not think it would be
much advantage.

Dr. J. N. Crouse: Either I have had some very unfortunate
ses to diagnose or else the essayist and those speaking have
ver comprehended what a severe case of ossification of the pulp
a tooth means. I have in my pocket part of some specimens
at I passed around once before. This case was the second of
e kind I ever had in practice, and occurred soon after the Chicago
e. The gentleman who was unfortunate enough to be afflicted
th this ossific deposit in the pulps of his teeth had been to several
ntists in two or three days to obtain relief from a pain, which was
cated nowhere except all over his head, and occurring at frequent
ervals, which were increasing in duration and frequency. No
e had been able to tell what was the matter, and I did not know,

but merely guessed at it, having had a similar case in the country. In this mouth there were five teeth in which the pulp canals were gradually filling up with ossific matter and causing the most intense pain and suffering, so much so that while the paroxysm was on you could hardly keep the patient in the chair. I drilled about half way to the end of root of a second bicuspid without finding any sensation, or any opening to the pulp-canal. The next day I extracted this tooth, and it was nearly filled up. A few days after he called me up in the middle of the night and I extracted a first molar.

The diagnosis of this condition is extremely difficult, because the pain does not locate itself definitely in any one tooth, being almost entirely reflex; but there is one sure sign. If you can see the patient when the paroxysm of pain is on, and immediately before it passes off, tap the teeth, you will always find extreme sensitiveness in the affected tooth until the pain ceases. In a few seconds this passes off, and you would then not discover that that tooth was more affected than the others. Within two years I have had three teeth of that kind, and have been able to find them all. In the last case the patient was in my office when one of these paroxysms came on, and she almost fainted away with the pain. Just so soon as it was over I commenced tapping with an instrument, and readily discovered the tooth where the ossification took place, so drilled into it and removed the pulp. I devitalized three teeth in this mouth.

You will see that there is considerable pericementosis also on the roots, and I think that where ossification has taken place there is pericementosis on the teeth also, so they are extremely hard to extract. I have never been able to attribute a cause, any more than you can attribute a cause to some cases where you have a pericementosis of all the teeth in the mouth. I have one patient where I think the roots are twice as large as they were originally and extremely hard to move, yet there is no particular cause for it. The diagnosis is the most important feature, because you must do it rapidly or you cannot keep the patient in your office. The paroxysms are extremely severe and of short duration, but occur more and more frequently. The pain is due to the ossific matter impinging on the pulp tissue, and the nearer it comes to the pulp the greater the pain, unless there is chance for reaction, and when they get filled up as far as these were I do not think there is anything to do but extract the teeth. In the cases I have had you

night diagnose for everything else and then make up your mind it was ossification of the pulp.

Dr. F. B. Noyes: I want to suggest one of the treatments of calcific matter in the pulp of the teeth. I have had occasion to get a good many dental pulps for histological specimens, and I would almost say that in the majority of them they had trouble on account of striking calcified bodies in the pulp. In the presence of larger or smaller nodules in the pulp tissue, calcified nodules are exceedingly common, and where that matter is not calcified it is of a nodular form and of the nature of calculi, or some such substance which has not yet been calcified. Those bodies are exceedingly prominent in almost the majority of dental pulps.

Dr. E. MaWhinney: I just want to cite a case and see if some of you could explain a few things to me. I have had several similar cases, but the point about this particular case is its increasing sensitiveness to thermal changes. It is the case of a young lady whose teeth I have taken care of five years, I think. She had a second bicuspid with a live pulp cut down, and a shell crown put on to carry a dummy. It has been on ten or twelve years. The tooth dummy was broken off. When she came to me the tooth was so comfortable and she disliked to have the crown taken off, that I polished down the dummy and left the crown standing there. When she came to see me three years ago she remarked to me it was beginning to be sensitive to heat and cold; I thought but little of it and passed it over. It has increased so from time to time until a few weeks ago the thermal changes affected it to that extent that it was quite unendurable, so, thinking that I could preserve the crown without taking it off, I drilled into the dentine, made applications of arsenious acid; the pain stopped, no sensitiveness, and I started to find the pulp canal, and I could not find it; took the crown off and I drilled into the tooth, worked very cautiously up to where the two canals should be, and I went almost into the apex where the one canal should be, and found nothing. In the other canal I finally found fragments of the pulp tissue. It was dead. I removed it and filled the root. There has been no trouble since, but the point I want to make is, why was that tooth increasingly sensitive. If all that deposit was taking place, you would think that would protect it. It was increasingly sensitive, no pericemental trouble, but sensitive to heat and cold; that is what I cannot understand. I have had many cases somewhat similar.

Dr. HARE (closing): It is getting late and I will not detain you very long. I wish to thank the gentlemen who have discussed my paper for the courteous and fair manner dealt with. Regarding questions that Dr. Brown suggested, I might say that if he never used the sulphuric acid, fifty per cent, in these cases, I should advise him to do so, because I think he will get very good results. I might also caution him not to use the bur too freely in cases where the deposit adheres to the dentinal walls, because he might not know just where to stop. There is a liability of going through the wall to the root. I find sulphuric acid much better in these cases than the bur. Gentlemen, I thank you.

THE ODONTOGRAPHIC SOCIETY OF CHICAGO.

A regular meeting was held December 12, 1898, the President, Dr. G. W. Schwartz, in the chair.

Dr. CARL THEODORE GRAMM read a paper entitled, "The Dental Profession in Charity."

DISCUSSION.

Dr. TRUMAN W. BROPHY: *Mr. President and Gentlemen:* The society is to be congratulated on having this most excellent paper read before it, since it is a fact that little has been done in the way of assistance to the worthy poor outside of that which has been done in medical dispensaries and college infirmaries. There are a few gentlemen in Chicago who have for many years been engaged in doing charity work for the poor. As far back as 1880 this work was begun in a small way, and it has been carried on ever since. I think the plan suggested by Dr. Gramm would be a most excellent one if it could be carried out. But the trouble I have observed is in getting men to do this kind of work faithfully, to make sacrifices to do it. If they spend a day or a few days in a month and continue to do so for two or three months, and then discontinue the work and become indifferent as to the demands of these people, very little good will be accomplished. But dentists should take hold of the work with a will and carry it on as though they were carrying on some business in which they are deeply interested from a financial standpoint. The only way charity work can be done is for the members of the profession to agree at the outset to make sacrifices of their own time and energy, but we find a great many of them are not willing to do that. I sometimes think that if the dental profession in the large cities were to refuse positively

o extract teeth for persons who would accept good advice and end them to a place like the one described in the paper, or to a ollege infirmary, where they could be cared for without expense o them, it would be a great step in the right direction. But there as been a tendency on the part of many, particularly the so-called ental parlors, to extract teeth for anybody without hesitancy or onsideration of their conditions subsequently, or for the future omfort of patients. This is an unfortunate condition of affairs hich exists in Chicago and in Illinois, and which our state board s so earnestly endeavoring to correct. I think this should be first orrected; then some movement looking to the establishment of ispensaries where the poor people may go, or perhaps more prop-rly speaking, infirmaries where they may be taken care of gratu-tously, would be a good thing.

The most important of all things in regard to the care of the eeth is to educate the people; and if we can get at them and train hem in regard to hygiene, and impress upon them the importance f cleansing the teeth, we will do a great deal more toward the reservation of the teeth than we do now. The medical profession re in a measure responsible for the enormous destruction of the uman teeth. I believe that if the medical profession would go at his work in a more serious manner and impress upon their atients the importance of early oral hygiene, we would be able to ave a great many more teeth than we do now.

The doctor made one statement which I think is open to a ttle criticism, namely, that the enlightened class of people are pposed to care for their teeth well. Now, my experience has en that the so-called enlightened class, or the people of edu-ation, of culture, of refinement, are not always those who are ost scrupulously clean in regard to the teeth. I find a great any such people who are extremely careful about their persons therwise, bathing and caring for their skin, etc., but are extremely areless about the teeth.

I trust that the mission Dr. Gramm has started out upon will e successful, and hope that he or some one will devise a plan by hich this work can be carried on in different sections of the city. think, however, if it is done, it had better be done in connection ith some of the numerous dispensaries or hospitals where people ongregate who are suffering from human ills, and then a staff ust be organized that will be faithful in the performance of their

duties. I have not formulated any plan myself, nor do I think Dr. Gramm has devised a plan. He has simply suggested that something might be done in this direction in connection with our dispensaries or hospitals for the saving of teeth and the filling of them with cement or some other material that would be cheap, and yet have sufficient permanency to at least preserve the teeth for a little while; and as cement will preserve the teeth for a little while, the patients will learn that a better filling material would preserve them for a good deal longer time.

When I was asked to open the discussion on this paper, I expressed a wish that some one else would do it who had given the matter considerable thought, at least more thought than I have, and have some well defined or formulated plan to present. I do not know whether the members of this society would care to give up the time to care for the poor or not. If they decide to do it, they should be faithful in the discharge of their duties, and under no circumstances permit pressure of business to interfere with them. Nothing but sickness should be considered as an excuse for being absent. If several of the members are willing to give up one hour a week for this purpose, much good could be accomplished by this society, which is the largest society in the world, except the national association. And if it will take hold of this work and carry it on in the proper spirit, it has a chance of making a greater reputation than it has already won. I presume that the essayist and the officers of the society will take this matter up and carry it still further, and that at some future time they will present a plan and locations for carrying on the work.

I do not know that I can say anything further on the subject except to remark that I would be glad to do anything in my power to further the project that may be set on foot to educate people in regard to this important subject and to enable them to preserve their teeth.

Dr. Gramm has spoken of the conditions in hospitals where he is doing this gratuitous work, and I believe it should be brought to the attention of the medical profession, so that they may see how much harm is done to the people through neglect of the teeth and how much good would come to them if they were to take more pains in educating their patients in regard to the care of the teeth. Nearly every family comes into the hands of a physician, and they can do more good than we can in training people as to the care of the teeth.

Dr. A. G. Johnson: The paper read by Dr. Gramm has really more merit in it than most of us would think. The idea of organizing a charity dental dispensary, or whatever you wish to term it, is something of great importance to the poor. The reason I speak of this is because I am connected with the Chicago Nursery and Half-Orphan Asylum, and have for the past four years been doing dental work for the children of that institution. I have from 175 to 200 children to take care of. I visit them once a month regularly. I treat the little ones at my office, giving them from an hour to an hour and a half every Saturday afternoon. If I deem it advisable, I put in permanent as well as temporary fillings. When I visit the hospital I extract teeth for the children. The mouths of the little ones are examined every month, and by examining them regularly I may find one or two teeth in a mouth that need extraction. The children range from little tots that can hardly walk to boys and girls up to twelve and fourteen years of age. I occasionally see some of those children for whom I did dental work three or four years ago, and they are very thankful to me and speak of what I did for them when they were little boys. They learn to brush and take care of the teeth. I have the little ones assemble in a class and teach them how to brush their teeth. When I first became connected with the institution they had no toothbrushes; they knew nothing about the care of the teeth; but after showing them they knew how to do it and brushed their teeth every morning regularly. If some one would volunteer to devote one hour a week, or one hour a month, to these little ones it would help me out very much. It takes from an hour to an hour and twenty minutes to examine 180 children. If some plan could be carried out along the lines suggested by Dr. Gramm in his paper, or a chair established in some institution for this purpose, much good, appreciative work could be done in giving the poor gratuitous services and instructing them how to take care of their teeth. I am sure we would accomplish so much good that it would be a blessing to these people, and especially to the children who are growing up to be men and women.

Dr. C. E. Bentley: I am very glad that this paper has been presented to the society, and I am especially gratified to know that Dr. Gramm has been thinking along the lines indicated in his paper. I do not know how far the plan he has advocated will be practicable, but it does seem to me that any plan which leaves out

what I consider one of the fundamental principles of this sort of education will be faulty, and that is the crusade that we as a society should make for the admission to our public schools of dentists to examine the teeth of children in the lower grades. No plan will be complete that does not include this idea. Dr. Brophy remarks that the principal way of getting this work effected is to educate the people, and no plan of education is so effective as to begin teaching the children who are in the public schools. I believe it is quite possible for a society of this kind to make its influence so felt with the Board of Education or among the parents of the children that we can impress the Board of Education of the importance of having dentists visit the schools regularly for the purpose of examining the mouths of children in the under grades. Any plan that leaves this feature out is, in my opinion, faulty. The plan Dr. Gramm has already pointed out should be included in the plan he has introduced. A young dentist approached me the other day, fired with enthusiasm, and asked my opinion about this very matter. I gave him all the possible encouragement I could, so much so that he consulted one of the members of the Board of Education. He told me that he was acquainted with the only lady who was on the Board of Education, and she informed him that the idea was not to be thought of; that the moment dentists were allowed to examine the mouths of children in our public schools the oculists would likewise want to examine the eyes of the children, and she said it would be preposterous to introduce or sanction anything of the kind. The young man came to me after his interview with the lady, much discouraged. I told him that in Germany the oculists *were* permitted to examine the eyes of children attending the public schools, and as a result of it the eyes of the children are more carefully protected by means of lenses than in any other country in the civilized world. Believing that both oculists and dentists should have access to the children of our public schools for the purpose of examining their mouths and eyes, I told him to go ahead. I gave him some suggestions as to what to do. He is a young man who, I trust, we will hear from in this society in the future. He wants the society to take the initiative in reference to this matter, and I think as a society we should do so. We ought to be able to impress the members of the Board of Education with the importance of having capable dentists to examine the mouths of the school children, not for personal gain or for personal

aggrandizement, but for the good it will do the children at large. If dental hospitals or dental infirmaries are established for this purpose, we can do a large amount of good in that direction. I feel sure that something will be done in this matter, and whether the Odontographic Society of Chicago or some other society shall take the initiative, I do not know.

Dr. J. E. KEEFE: This plan was suggested a few years ago, I believe, by Dr. Ottofy, and nothing ever came of it. Within the past two weeks I was discussing the matter with one of the members of the Board of Education and he expressed himself in favor of an examining committee for the purpose of visiting the schools and examining the mouths of children, giving each child a card stating what work was necessary, and also giving a list of the free dispensaries.

I believe it is a move in the right direction. The hospital idea is suggested in the paper is a good one. But we should get at the children in the public schools and advise them of the necessity of having their teeth attended to and not let them wait in ignorance until they are compelled to go to the hospital by an aching tooth.

Dr. DON M. GALLIE: Some two years ago, in talking with a member of the school board about this subject, he said that they frequently received applications from dentists to get permission to examine the mouths of the children in the public schools. He also said that it was not a question of getting permission to do this, but, if permission was granted, he was afraid that the Board of Education would be bombarded by every dentist for an appointment. I believe a few months ago Dr. Allport received an appointment as oculist of public schools, and still holds it. It caused a great deal of trouble, and it is believed that it is not a good thing. A great many parents are opposed to it, and those people would be equally opposed to dentists examining the mouths of their children. While there are thousands of poor children who would gladly accept this service and consider it a great boon, the members of the Board of Education say that such appointments would be the means of creating great rivalry among the dentists. Dr. Buxman suggested this matter through the press, and at that time it received more attention than has any attempt that has ever been made; but the member of the Board of Education I spoke to considers it inadvisable on account of the jealousy of the dental profession.

Dr. C. E. Bentley: I want to say with reference to the remarks made by the last speaker concerning the appointment of dentists for the examination of the mouths of the children in the public schools, it can be amply worked out by the societies and school board, or by any other organization that is interested in school children. What we want is the principle established that certain reputable men shall be delegated to do so many hours' work in each week in the examination of the teeth of children. I advised the young man who talked with me to-day on this subject to write to every city in the United States over a hundred thousand population, where there is a board of education and ask if there had been or is at present any such system in vogue. I also advised him to write to the proper parties in the large cities of England, Germany and France, using a printed slip for the purpose of asking certain questions, in order to get as much data as possible, and in this way he would be able to get the results of what had been done in those cities where examination of children's mouths had been undertaken, and then if he could present this data to the various societies or to the Board of Education, showing the advantage of such a system, in all probability the protest that has been spoken of by Dr. Gallie and others could be overcome, and by this means we could convince the Board of Education of the usefulness of the plan. When such a plan is carried out, and dentists of reputation and character are selected for the work, and who do not do it for mercenary purposes, the results will speak for themselves.

Dr. F. N. Brown: It seems to me, this is an excellent paper but the discussion has in a measure been switched to one side and we are not discussing the paper so much as we are the matter of whether we can succeed in having influence with the Board of Education of our public schools and through them have access to the children. It seems to me, the proper way to get at the children of the public schools would be through the city board of health, and not through the management of the public schools. Possibly it might be through legislation. If it is a good thing to have a board of health, it might be possible to have a number of dentists appointed on a salary whose duty it shall be to examine the mouths of the children; and if they were on salary, either elected or appointed, they would then know it to be their duty to look after this particular line of work. But if any society appoin

number of men to do this work without a salary, we cannot xpect much of a return. For instance, Dr. Johnson spoke f the number of children he examined in a few minutes. I ould suggest that an assistant be appointed to wipe his mouth lass, because with the rapidity with which the work is done, how n the world can much good be accomplished in that limit of ime. So I say, if we expect to accomplish much good in this irection, men ought to receive a salary for their work and do othing else. If the Odontographic Society can afford to put a an or men on a salary to do this work, then we could expect some ood results.

In regard to Dr. Gramm's paper, the plan outlined by him is comparatively new one to me and I must say that the children who ould have access to these hospitals would not be those from the ublic schools. As a rule, the children attending the public hools of Chicago have parents or guardians who, if complaints e made about the teeth, will see a dentist. The little patients at go to these hospitals need attention and care; while we are scussing the public school problem, they are still suffering. I ould say, that if this society is going to take action along this e and perhaps appoint a number of dentists to look after this ork, devoting so many hours a week to it, they should not use at office for any personal or selfish purpose, and they should ceive some recognition, or merit at the expiration of the year and the meantime should be under contract to fill each engagement th these hospitals.

Dr. Don M. Gallie: I wish to correct the last speaker in velling upon the advisability of having a board of examiners in e city schools. Dr. Bentley said he believes that Dr. Gramm's per would have been better had he included something in the y of an examining board for the schools. Dr. Brown says the ildren who go to dispensaries do not go to the public schools. ery child in the city of Chicago should go to the public schools, d if such a rule was enforced, it would be a good way of sending arity patients to the infirmary, and it would be a just way to find t in what cases dental work is needed and help given to the or.

Dr. E. J. Perry: It is remarkable to have presented to this iety such a paper as this. It has made a profound impression n me. When I read the title of the paper, I wondered in my

mind what the dental profession had been doing in the matter of charity; I did not know of what use the essayist could make of that subject, but Dr. Gramm has evolved from this subject a paper of very great and deep interest. The father of that paper was a kind and generous heart; his "*soul* must have grown wise with that wiser wisdom of the *heart*." I congratulate the Odontographic Society that it has had presented to it this paper. Of course, it is not a paper of scientific inquiry, and yet it might lead to that. Dr. Bentley's amendment, so to speak, to the paper is quite practical. I want to put in a plea for a class of people that we could not do charity work for, the great common people. The thought has come to me forcibly many times how little good we as a dental profession do, in proportion to the amount of good that there is about us to be done. Thousands and thousands of people are unable to come to the average dental office and receive the services of the dentist; they are classed among the great common people because his services to them are high. Now, then, the man who shall invent or devise a filling material which shall equal gold when it is at its best, which can be put in with less skill and at less price, that will resemble the tooth in color, and which will act as a nonconductor of thermal changes, and be nonirritant, will confer upon the great common people a lasting good.

At a meeting of the Chicago Dental Society a remark was made which I do not think all of you caught. It was a protest against the idea of cheapening the operation of filling. Fundamentally it was right; yet fundamentally it was wrong. Fundamentally it was *right* because cheapening the filling might destroy the art. Fundamentally it was wrong because cheapening the filling would bring it within the reach of the great common people. We want to reach the great common people, and not alone the little ragamuffins and homeless children, who are the victims of voluntary poverty. I have people come into my office who cannot pay even my moderate fees. They are truly unable to pay. That is due to economic conditions, which possibly, may some day be improved. I do not believe in charity; I believe in economic conditions which absolutely equalizes the opportunities of all men and makes charity unnecessary and abolishes involuntary poverty. The question here presented is a part of the whole great question of general charity.

Dr. GRAMM (closing the discussion): In replying to D

Brophy's statement in which he casts some doubts as to the possi-
ility of carrying on a movement of this kind in a practical and
uccessful way, I wish to say that this is not the mission of one
nan. If this work is to be carried on successfully, it must be done
y the society in a concerted way. In the first place, a movement
f this kind must have the solid backing of the society as a whole.
f we as individuals undertook this work, some ulterior selfish
notive would be attributed to us. I have brought forward no par-
icular plan. I have simply given you a general glimpse of what
reat good could be accomplished. I much prefer that the society
ppoint a committee to formulate plans for carrying on this work.

Dr. Bentley spoke of beginning a crusade for the admission
f dentists into our public schools for the purpose of examining
he mouths of children. I, myself, wrote a letter to Dr. Andrews
nd laid the whole question before him, and in return received a
ery courteous reply. In his reply Dr. Andrews suggested that
had better address myself to the secretary of the board—Mr.
raham—which I did. In fact, I called on him. He listened to
ie attentively and said you had best address yourself to the indi-
idual members of the board, adding that the secretary of the
oard could have but little influence in the matter. There is one
ember of the board who is physician. He is a specialist of dis-
ases of children. I wrote him at length, but have not yet received
reply.

Education of the masses is a slow, tedious, sometimes disheart-
ing process, and a long time must elapse before a body like
is can have sufficient influence with the public and sufficiently
ducate them regarding the necessity of having the mouths of
ildren examined. Undoubtedly, too, many better-to-do parents
ould resent the matter of having publicly appointed dentists
amine the mouths of their children *nolens volens*.

Dr. Brown said something with reference to appealing to the
y board of health. As far as that proposition is concerned, I
ink it would command about as little attention there as it would
om the school board.

I have but one request to make to this society, which is, that
u will not let the matter drop where it is, but that some one will
ake a motion asking the president to appoint a committee, if not
inaugurate this work, at least to study the feasibility of it and
port at some future meeting.

Proceedings of the Minnesota State Dental Association, Fifteenth Annual Meeting, Held at St. Paul, September 6, 7 and 8, 1898.

The fifteenth annual meeting of the Minnesota State Dental Association was convened at 2 o'clock P. M. on Tuesday, September 6, 1898, at St. Paul, in the clubrooms of the Irish-American Club, in the Endicott Building.

In the absence of the president, Col. C. A. Van Duzee, on military duty, the meeting was called to order by the vice president, Dr. L. P. Leonard, who acted as presiding officer during the session of the convention.

On motion of Dr. Goodrich, the roll call was dispensed with. Dr. Reid was called to the chair, and Dr. Leonard presented the president's annual address. See page 25.

DISCUSSION.

The Chairman: The subject is now open for discussion.

Dr. Goodrich: I hardly know how to open this discussion, as the address is altogether out of the usual routine of past programmes, and in that respect the president's address is peculiar to me. It is a paper on oral hygiene, and heretofore we have had essays on dental laws or something in connection with the regular practice of the profession.

I would like to inquire of the members here just exactly how they are going to work to follow out the instructions and ideas presented by Dr. Leonard. Personally, I try to teach my patients to keep the mouth clean, and have always done so; but I do not believe in quill toothpicks, or toothpicks of any kind, in the majority of mouths. If the teeth are like mine, no harm will be done; but with the majority of teeth they will work a positive injury. I try to impress upon my patients that after they have used their tooth powder or tooth wash to have handy in their pockets a little floss silk—not a spool, but one of those shuttles they use on a sewing machine, which is a nice way to carry it in the pocket—and have them use that silk in preference to toothpicks.

I would very much have liked to hear something from the president different from oral hygiene, because that hardly admits of much discussion. We all know what to do or to say to our patients. If there is any peculiar mouth wash, or any different method of treatment, that any one has to offer, I would like to hear

from him. For myself, I have to say that I simply use the old stereotyped mouth washes and tooth powders. I generally recommend Lyon's tooth powder and listerine for a mouth wash. I would like to hear what Dr. Leonard has to say.

Dr. WEISS: I think the subject presented by the essayist is a very valuable one. I think it is a point that is very frequently omitted, and is rarely dealt with as it should be. I am one of the younger members of the profession, but I have come across many patients who have told me they have never had any instruction as to the care of the teeth. The mouth indicated that they have never given the teeth the care they should have received. The question Dr. Goodrich brought up as to how we should instruct our patients to do what we want them to do is an interesting one. I presume we have different ideas in regard to how the teeth should be cared for, and the instructions I give may be different from that given by others. I try to make it a point never to get through with a patient without giving him instructions how to care for the teeth. In the first place, I instruct them in regard to the things that are used in the care of the mouth; the second, how they are used; and third, when they are used. In the first place, I do not think there is any particular kind of tooth powder that is the best. I do not think there is much difference in the tooth powders we get from our druggists; any that we get from a reliable druggist are all right, the main point is that the brush is used, the right kind of brush, and how it is used. The ordinary brushes that we obtain at the druggists' and department stores are absolutely worthless. The brush I recommend my patients to use is the prophylactic brush. I presume most of you know what it is, but many of my patients have never seen or heard of them. Dr. Leonard has one here. This is a little different from that made by the Florence Company; as you will notice, the bristles are further apart. There are only about one-half as many bristles in the prophylactic brush as there are in the ordinary brush. There are too many bristles in the ordinary brush, and they are cut off even on the surface. I take the two kinds of brushes to show my patients, so they can see the difference for themselves. It is the only way to do, in order to make them understand what you mean. When they understand wherein the difference lies, they are more apt to follow instructions. By placing the ordinary brush upon the fingers you can show them that they simply brush across the teeth, they never brush between

the teeth at all. The idea is not to brush across the teeth, but they should brush up and down. With the ordinary brush the bristles do not get between the teeth. That is where the cleansing should be done—between the teeth. The exposed surfaces of the teeth clean themselves, but the spaces between the teeth do not. I take the ordinary brush and compare it with the prophylactic brush, which has just half as many bristles, and is uneven, and I can very readily show my patients how easy it is to get between the teeth. It works like a number of toothpicks. I believe certain kinds of toothpicks improperly used do a great deal of harm.

Dr. Leonard: What kind do you favor?

Dr. Weiss: The kind Dr. Goodrich does not favor—the quill toothpick. It is the only kind I do favor. You have no shreds or splinters lodging between the teeth from the use of quill toothpicks.

The next point is to instruct the patient when to clean the teeth. I always make it a point to find out from my patients when they clean their teeth. They usually say in the morning before breakfast. I ask them what good they expect it will do them to clean them at that time. They are not going to help their teeth any by cleaning them before breakfast. A good many people have an idea that they are taking good care of their teeth by cleaning them once a day. If only once a day, they should be cleaned in the evening after meals. Many say they have never heard of it before. I do not know whether your patients tell you the same thing or not. I am simply telling you what experience I have with my patients. I advise them to use a prophylactic brush, because the bristles are uneven and they do not bend so freely. You want a medium stiff brush and few bristles so they will work between the teeth and remove any deposit that may have accumulated between the teeth. I have seen cases where the outer surface of the teeth were kept clean, but upon the inner surface there was a deposit.

I think too many times the dentist takes it for granted that patients know how to take care of their teeth, but they do not. I call their attention to the fact that they must brush their teeth from the lingual side as well as on the outside, and show them how to do it. It is almost as easy to clean them on the lingual side as it is on the buccal side. I always insist on this, and then find out whether they follow instructions.

I think there is almost too much stress laid on mouth washes in practicing oral hygiene. Too many people think a mouth wash is as good as a toothbrush and powder. It is a very simple matter to take a mouthful of wash and rinse out the mouth, but I think it is absolutely useless so far as cleansing the teeth is concerned. A mouth wash is all right enough to supplement the brush and tooth powder, but it will not take their place. I always recommend the use of tooth powder and the toothbrush after every meal. I try to impress upon the patient the necessity of cleansing the teeth once a day, but it is a hard matter to get patients to cleanse their teeth after every meal; but when it is possible to do so the teeth should be brushed after every meal.

Dr. CRUTTENDEN: This is a subject I do not like to discuss, because I must plead guilty to the charge that there are some teachings I never practice. I was operated on last year by Prof. Hoff, and about thirty or forty men came and looked into my mouth and said: "Crut, you had better spend a dollar and have your teeth cleaned." (Laughter.) I am in a position where I can have it done now, and I may want to give some of you gentlemen a chance to-morrow. I think there is a great deal in the care of the teeth, and the proper time to take care of them is early in life, when the habit will be formed. I used to go around with my teeth so dirty that my older brother was ashamed of me, and when I went to visit him once he bought me some tooth powder and paste and told me to clean my teeth, and I have got it now. (Laughter.) If the habit is formed when young, as the child becomes older it becomes second nature, and it will continue to take care of the teeth. It is rather a delicate subject to broach to a patient to tell them they do not take proper care of their teeth. It is something I hate to speak of, but I almost always try to demonstrate the proper use of the brush. I feel the same as Dr. Weiss in regard to the brush, and I have used the prophylactic brush a great deal. I bought a gross of them at the time the American Dental Association met in Minneapolis, and kept them for sale, but I found it was not a wise thing to do, because people thought you were trying to sell them something. I advise people now to go to the drug store. I sold one to a man who brought it back and said: "Here, this is a second-hand brush. Somebody has used it and worn the bristles down." (Laughter.) I think it is a very good brush.

I think the general opinion among people is—at least, a great

many seem to think so—that tooth powders injure the teeth. I tell them I never saw but one case where the teeth were injured by brushing their teeth too much, and that was where a lady used charcoal. She brushed her teeth three times a day with charcoal, and the result was she had worn down the face of the teeth so that the nerves were nearly exposed. I find that the proper use of powder is good, and listerine is a good thing to use, but I think borolyptol is better for a mouth wash; pasteurine, also, is a good mouth wash.

Dr. Good: Some of the gentlemen have been saying that one tooth powder is as good as another. I beg leave to differ with them, because I do not believe they are. I believe some tooth powders injure the teeth more than all the brushes can do them good, for the simple reason that in quite a number of tooth powders, if examined, will be found acid that will injure the teeth, and consequently is more injurious to them than if let alone or simply brushed with water. It is hard to say what tooth powder to use. I think if a man can get up a formula of his own that is not gotten up to sell, but simply for the use of our dental profession, is the best thing to do.

Dr. Mary V. Hartzell: There is one thing that has not been mentioned this afternoon, and that is in regard to the washes so often prescribed. It has always seemed to me an unwise thing to do to use such stimulating washes as listerine and similar things of that kind daily. Any member that is overstimulated becomes abnormal, and these washes should only be used occasionally, or only at times when there is inflammation of the oral membrane. Perhaps borolyptol might not be classed among them. They say it is strongly antiseptic and at the same time is not so stimulating. The asepsis of the mouth would be much better obtained by the use of the brush or mechanical cleansing than by the use of antiseptics, anyway.

Dr. Smith: I do not plead guilty of neglect in regard to teaching or trying to instruct my patients how and when to take care of the teeth. I lost my teeth because I had no instruction whatever when a boy up to the time when I became a dentist. When I can I get my patients to have their teeth cleansed and then instruct them to have it done every time they come into my office. The toothpick I recommend is of hard wood, like orange wood, like the kind found at the dental depots, and I make them myself before the patient. I make one end of it flat and the other similar

to a quill and teach them how to use it. Then I instruct them in the use of the floss silk. If I can get the silk through the teeth I see to it that they do it and teach them how to do it. About the only way I can get some patients to take care of their teeth is to tell them they have bugs in the pulp, or anything that is alive, and that they will eat holes in. There is another thing I teach them in regard to cleaning the teeth. After cleansing them as well as they know how I tell them to brush up and down. I tell them to brush down on the upper teeth and brush up on the lower teeth, and that is a point which should be considered. If you brush the lower teeth down you brush the gums away, and if you brush up you hug them to the teeth. If the gums have become spongy I urge them to use the thumb and finger and push them against the teeth. In that way the gums become tough and hardened, and I have seen them improve in two weeks' time so I hardly knew them to be the same gums.

In regard to tooth powder, I tell my patients they cannot get along without tooth powder. They must have tooth powder something like pulverized cuttle bone.

So far as the use of borolyptol is concerned, I do think not one-eighth borolyptol can do any harm in any mouth, and I tell them it disinfects and stimulates the gums.

The CHAIRMAN: The discussion is getting a little warm now and we would like to hear from the rest of you gentlemen.

Dr. GOODRICH: One thing Dr. Cruttenden said I do not believe in. He said he was a little diffident about telling his patients they had to keep their mouths clean and brush their teeth. If I find a mouth pretty clean I do not say much, but if I find it dirty and the teeth neglected I jump on them hard. I do not think it is necessary to hesitate, whether it be a lady or a gentleman; tell them, and tell them pointedly. The thing is to impress them with the importance of it, and with some patients it is necessary to go at them rough shod. I have a case in mind of a young miss I saw last year, and I supposed her mouth was in good condition; but when I saw her again within the past three weeks I found fourteen or fifteen cavities. I hardly knew what to say or do. She apparently had taken pretty good care of her teeth. Her mother was with her, and I asked her if the girl took care of her teeth and she said she did, morning and night. I spent about half an hour talking to that girl. She was a girl about thirteen, and I

made her promise me on her word and honor that when she got up in the morning she would do a certain thing—after breakfast she would thoroughly use her toothbrush and her washes, after dinner other washes, and after supper still other washes. I had different kinds of things I wanted her to use, and I kept right at her and made her promise to use all sorts of stuff. A few days later I met her father and he asked if I was not going to give his daughter a chance to go to school. I said "No, not for the next three years." He said he thought perhaps I had merely given her so much to do in order that I might be certain she did a part. I told him that was just what I was after. I got the girl interested, and I believe I am going to save those teeth; otherwise I do not believe she would have a tooth in her mouth by the time she is sixteen or seventeen. Do not be afraid to go for them and tell them what is right.

Dr. Moody: I think the time is ripe when most of us should have a thorough medical education as well as dental. I think the physician should be instructed as to the care of the teeth. They have an opportunity to examine the teeth of children, and when they see that care is necessary they ought to insist on its being given. I know many of us, and I am one of them myself, never realized the importance of taking care of the teeth until ten or twelve years ago, and now we regret the fact that we did not take better care of them than we have. The school children should be instructed in the care of the teeth, those little ones who do not know it of themselves.

In regard to washes, I have instructed my patients the same as Dr. Weiss. I instruct my patients to use the prophylactic brush. I have them for sale in my office and I instruct them how to use them. I might talk on the subject of brushing the teeth properly, but it is not necessary to go over the field. I always tell my patients to brush the teeth away from the gums, the same as Dr. Smith recommended—down on the upper and up on the lower.

In regard to mouth washes, I have found in my short practice that the best antiseptic wash is pasteurine. That will not answer the purpose alone. I have used with the pasteurine the oil of cassia. I dissolve it in alcohol and then add pasteurine to it, and I find it makes one of the nicest antiseptic washes we can get. For a four ounce bottle I use four drops oil of cassia, dissolved with alcohol, and then add about an ounce of pasteurine and fill up the

bottle with sterilized water. I have good success with it. A patient came into my office with his teeth very loose and he suffered much with pyorrhœa. I gave him some of this wash and instructed him to come in again when the teeth were getting better, and the next time I saw him he had as nice teeth as any one could wish for.

Dr. SMITH: In regard to physicians teaching their patients, I think physicians should be taught, and, I am sorry to say, it is a good deal so with the dental profession. If you are going to teach the medical profession to teach the children we ourselves should adhere to this simple instruction that has been given to-day.

Dr. REID: With your permission I will say a little on this subject myself. I think, gentlemen, to start out with, there is no one thing that is so poorly done by the dentists as cleansing the teeth. Why? For the simple reason that in years of practice we have never got anything for it. We have received no compensation, and the result is it has been poorly done. Who is to blame for that? You can tell. (A voice: "The profession.")

I will take issue with Dr. Weiss when he says there is no difference in tooth powders. The majority of tooth powder sold in our city is sold at the department stores. Is it the best that is put up? He knows where he can get the best. Dr. Lyon's tooth powder is a good thing. I believe, with Dr. Good, it is a mistake to say that one tooth powder is as good as another, because we know it is not.

There is another fault that lies with the dentist and that is in not taking sufficient time to impress upon his patients what they should do in cleaning their teeth. When they come into my office I have them tell me what they do. I ask them how long a time they spend in brushing their teeth. They say from three to five minutes. I say, "You do not. You do not spend over sixty seconds." I have had them get mad at me for telling them that. Take ninety-nine people out of a thousand and they do not spend on an average more than sixty seconds in brushing the teeth. I think it is a lack of time—we do not take time to impress upon our patients the importance of it. I put it on other grounds sometimes; I say to them, "You can do more for the preservation of your teeth than I can do if you come in here once a month." I try to appeal to them on a selfish ground. I have had people come to me for whom I absolutely refused to do anything, and I believe it would be a good thing for all of us to do, whom I told the first thing to do would be

to clean their mouths thoroughly before I commenced anything else, then I could see what I was doing. I think as great a difficulty as lies in the way in the whole matter is to get people impressed with the importance of it and urge them to spend more time in cleansing their teeth. They spend more time on their finger nails and hands. If teeth are brushed once a day it should be done immediately before retiring, but if it is done only once we get better results then than if done at any other time.

It is a lack of remuneration that is to blame in the first place; we do not get paid for it. We do not know who is to blame for it; Dr. Smith says it is the dentist; I think so myself. There is a good deal of human nature in all of us and we are not going to do anything for nothing.

There is one thing in which our professional brethren, the medical men, have the advantage. They are in a position in which they can teach the children and the parents long before the children come into our hands, and I think if physicians would impress upon parents the importance of keeping their little children's teeth clean, brushing them for them and forming the habit in the child, I think they could do more in the matter of education than the dentist could do when the child had reached that stage of life where it came into his hands. I think that would be a good thing if it was done.

Dr. MURRAY: In this matter of cleansing the teeth among our patients I want to say a few words. I did not hear the early part of the discussion, but I think I know the drift of it. How many of us in examining the mouths of our patients find the teeth worn by the toothbrush, sometimes seriously. I think dentists, as a rule, do not give their patients proper advice about brushing the teeth—about using the proper method.

So far as dentifrice is concerned, I think different patients require different dentifrices. We find entirely different chemical deposits in some mouths than we do in others, and I think they require a different dentifrice. In some mouths the deposit is of a very oily nature, and in those cases I think we should prescribe a tooth soap; I think it would act better than tooth powder. Another thing, I think we should be very careful, in some mouths at least, to caution patients to brush the teeth downward instead of crosswise. This is a point that is often overlooked, but in some mouths, in a month's time, the condition of the gums will be very much improved.

The CHAIRMAN: What is the objection to using a tooth powder hat contains soap? You can use both.

Dr. WEISS: I would like to correct a wrong impression that eems to prevail among those present in regard to what I said as o the use of tooth powder. I think the stenographer's report ill show that I did not say I considered all tooth powders alike, ut I said any tooth powder we obtained from a reliable druggist. f you go to the department stores, where anything is put up to atch the pennies, you are liable to get something that is of no ood. There is a great deal of question in regard to injurious ubstances incorporated in tooth powders. Has any one here ever een or known of a tooth powder, or heard of any one else examin- ng a tooth powder which contained some substance injurious to he teeth? I will venture to say that seventy-five per cent of my atients, when I call their attention to the matter of cleansing their eeth and tell them what to use, they say they have not been using ooth powder, but they have used listerine, pasteurine and anti- eptic mouth washes. They have heard that tooth powder wears he enamel of the teeth. I have never seen a case yet (perhaps I m too young in the profession) where it has worn the enamel of ne teeth. I have seen cases that I think are sometimes looked pon as the wearing of the enamel, caused by the use of the tooth- rush, which is known as erosion, and I think those are the cases eferred to as having the enamel worn by the toothbrush. Most f our tooth powders are composed of precipitated or prepared halk. The one point about any dentifrice is that nothing should be sed that is not soluble in the mouth. A case in point is the one referred to by Dr. Cruttenden of the lady who used charcoal. any people like to use something they can get at home; they ill use ashes, salt or charcoal. I do not think salt is so bad, but harcoal, ashes and pulverized orris root will not dissolve in the outh. It is not the injury done to the teeth by those sub- nces, but it is the injury done to the gums, causing a diseased ndition of the gums and acting indirectly on the teeth. Some ople use pumice stone. They have known of their dentist brush- g their teeth with pumice stone, and they will go to the hard- are store and get pumice stone; they will have tooth powder ough to last them five years. The teeth cannot be cleaned with y of these substances without some of the particles remaining tween the teeth, and it acts as an irritant and indirectly the teeth e acted upon.

In regard to the toothbrush, Dr. Cruttenden said patients are apt to think you are trying to sell them something. Your patients should have confidence enough in you to think you would not sell them an inferior article at a large price. The prophylactic brush costs a little more than the ordinary brush. You can get tooth brushes all the way from ten to twenty-five cents, but the prophylactic brush costs thirty-five cents, and if you sell them a brush with the bristles uneven, they think you are selling them something that is no good. I tell them the prophylactic brush is always good, and that it is put up in a little yellow paper covered box, so they will make no mistake. We have glory enough in the way of receiving large fees without receiving a large price for tooth-brushes. (Laughter.)

In regard to broaching the subject of cleansing the teeth, I think it is true that some patients are inclined to take offense, but there is a way of getting at a matter of that kind without incurring their displeasure. You do not have to tell them point blank that they do not clean their teeth. When I have patients whose teeth need attention I ask them what kind of brush they use, and I find out the manner in which they use it, and that leads to the question as to how to clean the teeth, which gives me an opening to go through with this instruction how to cleanse the teeth without giving offense to the patient.

Dr. MERRILL: I did not hear the beginning of this discussion but I presume it is on the question of the proper cleansing of the mouth, and the means. I do not know whether it has been touched upon, but I would like to suggest that it would be a good idea for the State society to formulate and promulgate some kind of dentifrice that could be used and recommended by dentists to their patients. That matter was brought up two or three weeks ago by my brother, who came to me and wished to formulate some kind of dentifrice and wished me to put my name to it. I told him I would do nothing of the kind, but I told him I thought if he would hand a dentrifice that was recommended by the State society it would be a good thing, and he thought very favorably of it. I think Dr. Leonard recommended something of the kind two or three years ago, and some action was taken in regard to it. I think it would be a good idea for the State society to recommend some formula that would be acceptable and that could be sold by our druggists as endorsed by the State society.

Dr. LEONARD: I think we had better consider the subject closed, as we have a considerable number of papers to present this afternoon. I will say I am very much pleased with the discussion my paper has called out; it is a surprise to me, and has exceeded my expectations. I think it is a mark of progress in dentistry when we consider the interest that has been shown here this afternoon in the fundamental principles of dentistry—the saving of teeth.

Before I forget it I just want to answer Dr. Merrill. I recommended some time ago that we have a package put up containing the necessary articles in the way of dental requisites, with printed instructions right on the package. It would save us a great deal of trouble simply to tell our patients to go down to the drug store and get package number so and so. I did not say anything about what should be used or what should not be used. I am not a believer in medicine. I do not believe much in the curative effect of medicine. I believe what the Creator has given us are the things which effect the cure. I believe disease is simply the effect of the violation of some natural law, and to cure that we need more coöperation with nature.

As to the broaching of the question of oral hygiene to patients, it is a delicate matter; there is no question about it. I think that is one of the reasons why it is not broached more frequently, but there should be tact in that as well as anything else.

[TO BE CONTINUED.]

Hydrargyrol, mercury paraphenylthionate, is a compound of the formula $C_6H_4.OH.SO_3Hg$. It was introduced by Gautrellet as a succedaneum for corrosive sublimate, over which it is said to have the advantages of not precipitating the albumin of the tissues and of being seventy-five times less toxic. It occurs in the form of brownish red scales, having an odor resembling that of gingerbread. Its specific gravity is 1.85, and in reaction it is neutral. It is insoluble in absolute alcohol, but quite freely soluble in water and glycerine, yielding beautiful ruby red solutions.

According to Gautrellet, hydrargyrol in 1:250 solution completely sterilizes bouillons; and introduced into a growing culture it precipitates the alkali toxins. Its solutions are stated to be neither caustic nor even irritant.

Further reports are not extant.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITOR: A. E. MOREY, PH. B., D. D. S.

CHICAGO DENTAL SOCIETY.

The recent meeting of the Chicago Dental Society, celebrating its thirty-fifth anniversary, was one of the most successful meetings held in some years. The clinics, while not as numerous as in former years, held the attention of the members during two days. Visitors were present from Nashville, Cincinnati, Cleveland, Toledo, Indianapolis, St. Paul, Minneapolis, Omaha, Kansas City, St. Louis, Denver, Milwaukee, Madison, from Ohio, Indiana, Iowa and other States, besides Illinois. The papers were unusually good. The paper of Dr. Rhein covered one evening in its discussion, and the paper of Dr. A. H. Thompson was unusually well received, as was that of Dr. De Ford. We will begin their publication in March.

EDITING A DENTAL JOURNAL.

The editor of the *International Dental Journal*, in the February number, says, on page 132: "It is time that the moral sense of the editors of journals should be above publishing such scurrilous letters." The above relates to a letter which was published in the December number of the DENTAL REVIEW, page 934. The letter we have read over, and beyond the fact that it somewhat keenly criticises some of the work of the faculty association, we do not see that it is scurrilous. The gentleman who wrote the letter is a member of the faculty of one of the oldest colleges in the association, and probably knows what he is talking about. Sometimes a good counterirritant is needed in societies as well as on people, and perhaps the editor of the *International Dental Journal* is somewhat thin skinned and this was just what was needed to bring about some reform about admitting colleges, etc. Consistency is a jewel,

and if the editor will turn to some of his own remarks in his own editorial on "Higher Education" in the same issue, he will see the pertinency of these "writin's." We are editing a dental journal to give all sides a show. When a communication exhibits downright vulgarity or fails to show an honorable *motif* we decline it; but if it has a *raison d'etre*, we send it out, not because we endorse it, but because we believe in giving all a chance. We can supply the name and address of "Onlooker" when the proper authority demands it and can give good reasons for wanting to make his acquaintance. Meanwhile we are not libeling any one, and are just as anxious for the upbuilding and aggrandizement of the profession as Dr. Truman or any other editor of a dental journal in this or any other country, the publication of "Onlooker's" letter to the contrary notwithstanding.

The Banquet.

At the recent banquet which closed the anniversary meeting in Chicago a decided innovation was noticed. There were no dental speeches. The proceedings were opened by the toastmaster, Dr. J. E. Hinkins, in a speech of welcome. There were recitations by Mr. H. A. Antram, an address on "Human Nature," by Rev. B. S. Terry; then an hour of descriptions of photographs taken in Cuba by Col. J. B. Sanborn, of the First Illinois Volunteers, after which speeches by Dr. H. Van Tassel on "The Faces We Miss," "Our Friends," by Dr. M. L. Rhein, a solo by Mr. Kimball, a 'cello solo by Mr. Schoesling, and "A Personal Narrative of the Campaign in Cuba," by Major Smith, of General Shafter's staff, and a speech by Dr. C. L. Hungerford, "A Genial Visitor," closing with the "Star Spangled Banner." To say that the audience was well entertained only expresses it feebly. There were 150 present.

Dr. Hart, of San Francisco.

In a paper published in the *Items of Interest* for February by Dr. A. C. Hart, of San Francisco, occurs the following: "The interior teeth of the monkey often showed signs of pathology." As this is a fair sample of the paper, we only make the extract to show the looseness of construction of this *very* remarkable paper on "Prevention of Decay of Teeth." The article as a whole purports to be a definition of the author's views on decay of

the teeth, but it is mostly a tirade against the work of Drs. Williams and Black without definiteness or excuse sufficient to demonstrate the author's right to be a critic. Among many luminous things printed by the author, we cite the following to show his style of logic and syntax: "Dr. Williams offers no explanation why teeth with pyorrhœa alveolaris do not decay, although according to his own theory they ought." It is such things as these that cause us to wonder why the time of societies is taken up in considering English "as she is wrote." Again: "For in their pockets and covering the teeth, especially the roots, leptothrix and other forms illustrated in his micro-photographs are present in millions. Surely *we have* present the environing conditions, according to his own views, yet these teeth are generally quite immune to decay. Again, take those little spiculæ of roots, the remains of deciduous teeth, the crowns are there yet little pieces remain free from decay!" And this is science, so easy to tell but, Oh, how hard to understand! Generally such rubbish should best remain unpublished instead of running as a serial, for it is to be continued!

Dental Charity.

Attention is called to the paper of Dr. Gramm on "The Dental Profession in Charity," as we believe that so far no organized attempt has been made to systematize such work in any large city. Any letters on this subject will be cheerfully published.

MEMORANDA.

Dr. C. P. Pruyn is in Florida for his health.

Have you used orthoform—the new antiseptic?

No new dental colleges in Chicago since last month!

Dr. J. W. House, of Grand Rapids, was in Chicago in February.

Pressure anæsthesia is the newest and latest in dental therapeutics. Try it.

There were about three hundred visitors in Chicago during the anniversary.

Last month it was vapocaine. Now it is potassocaine—all for local anæsthesia.

Dr. J. N. Crouse has been spending a few weeks in the South for health and pleasure.

Dr. Geo. S. Nason was the sole representative from Omaha at Chicago during the clinic.

Dr. Laurence Leonard, of Waseca, Minn., was in the city during the month of February.

We are shortly to have a monthly *Review of Reviews of Dentistry*. Where, when, which?

The International Dental Congress at Paris is beginning to assume a form which bodes success.

The Journal of the British Dental Association has been enlarged and much improved in appearance.

Dr. H. Van Tassel, of Denver, was a visitor at the anniversary clinic in Chicago, February 3 and 4.

Dr. W. V-B. Ames, Dr. R. Good and Dr. J. A. Dunn attended the Southern Branch, N. D. A., at New Orleans.

The Chicago College of Dental Surgery held an alumni clinic Wednesday, January 11, which was largely attended.

Dr. M. L. Rhein, of New York, spent three days in Chicago during our mid-winter meeting. He read a paper on Pyorrhœa.

The Northwestern University Dental School held a successful clinic Monday, February 6. There were many visitors present.

Porcelain inlays and gold inlays are subjects of vital importance judging from the interest they excited at the recent clinic in Chicago.

There must be something about "pressure anæsthesia," as the demonstrations by Drs. Hungeford and Richter were both successful at the late celebration in Chicago.

Just now in dental circles in Chicago the question is about the passage of a law restricting the establishment of colleges unless they have an endowment fund large enough to justify their existence.

Did you ever use carica papaya? It is useful to digest pulps, mucus and blood in the roots of teeth. Use the powder, first cleansing as much as possible with hot sterilized water. It is better than kalium natrium.

Some newspaper criticism of the recently proposed bills to further education in Illinois has resulted in a proposed amendment to the medical law and the dental law, and to a change in the educational problem endorsed by Profs. Harper and Rogers.

The Chicago College of Dental Surgery is fitting up a large library and reading room for the benefit of the students.

A librarian will be in charge and all the leading periodicals, both medical and dental, will be upon the shelves as well as several thousand volumes of medical and dental books.

HAYDEN DENTAL SOCIETY.

Officers for 1899: President, Dr. Alfred Guthrie; Vice President, Dr. W. F. Michaelis; Secretary and Treasurer, Dr. T. E. Reynolds.

ACUTE PHARYNGITIS.

Codeine	5 grn.
Extr. catechu	30 grn.
Extr. glycyrrhiza	150 grn.

Divide into thirty troches. One every two hours.

STOMATITIS IN SMOKERS.

℞ Salol	1
Tinct. catechu	2
Spir. menth. pip	50

M. S. A teaspoonful in a glass of warm water as a mouth wash.

ORTHOFORM IN TOOTHACHE.

Dr. Hildebrandt asserts that orthoform causes to cease completely the violent pain due to inflammation of the pulp of a decayed tooth. To this end, it is sufficient to introduce into the cavity of the tooth a plug of cotton steeped in an alcoholic solution of orthoform. The pain instantly disappears, and for a considerable time. Being absolutely deprived of any toxic properties, orthoform constitutes in such cases a simple remedy, and one which the patient can apply himself without danger.—*Med. Press*, December 21, 1898.

"CANKER" CURE.

In further reply to your inquiry we give the following application for that slightly ulcerated condition of the mouth sometimes known as "canker." The formula appears in the *Bulletin Général de Thérapeutique:*

Borax	1 dr.
Tincture of myrrh	2 drs.
Syrup of blackberry	10 drs.

CHILBLAIN INT.

Resorcin	1 dr.
Ichthyol	1 dr.
Tannic acid	1 dr.
Water	5 drs.

Prof Boeck finds that this is not only an excellent application for chilblains, but that its prolonged use will prevent that troublesome dryness and disposition to chap which characterizes some lips.

EUCAINE.

Can you give me any information as to eucaine hydrochlorate, what it is, and what is meant by eucaine A and B.?—G. A. R.

"Eucaine A" is the name of methyl-benzoyl-tetra-methyl-gamma-oxypiperidin-carbonic-acid methylester. It was introduced by Dr. G. Vinci, of the Pharmacological Institute of the University of Berlin, as a succedaneum for cocaine, with the claim that it is rapid in action, safe, produces positive and prolonged anæsthesia, and causes no serious after-effects; and, furthermore, that—contrary to cocaine—it possesses some antibacterial power. Oculists soon reported, however that in certain cases the eucaine caused severe burning and marked injection of the conjunctiva. Accordingly, experiments were instituted, which resulted in the discovery of another substance, namely, benzoylvinyl-diacetone-alkamine, to which the name "eucaine B" was given to distinguish it from the older eucaine, eucaine A. More recently these products have been distinguished as *alpha*-eucaine and *beta*-eucaine. Beta-eucaine is chemically not only related to alpha-eucaine, but also to cocaine, but especially to tropacocaine. It is said not to produce irritation of the mucous membrane of the eye. It can be used for subcutaneous injection.

PROGRAM OF THE ST. JOSEPH ODONTOLOGICAL SOCIETY.

November 5. Office of Dr. F. D. Mann; essayist, Dr. F. P. Cronkite; subject, "The Outlook for the Coming Dentist;" discussion opened by Dr. C. H. Darby; office incidents, Dr. Lee L. McDonald.

December 3. Office of Dr. J. M. Austin; essayist, Dr. M. W. Steiner; subject, "What Has Been Accomplished in the Past Year by the Dental Profession;" discussion opened by Dr. F. D. Mann; office incidents, Dr. Wesley Good.

January 7. Office of Dr. C. H. Darby; essayist, Dr. C. N. Johnson, of Chicago; subject, "The Preparation of Typical Cavities;" discussion opened by Dr. D. Patterson, of Kansas City, followed by Dr. W. H. Shultz, of Atchison.

February 4. Office of Ross Brothers; essayist, Dr. Daniel Morton; subject, "The Relation of the Practice of Medicine to Dentistry;" discussion opened by Dr. R. Scott; office incidents, Dr. Spencer Pitts.

March 4. Office of Dr. C. M. Cobb; essayist, Dr. G. W. Northwood; subject, "Crown and Bridge Work, its Uses and Abuses," discussion opened by Dr. G. Crandall; office incidents, Dr C. M. Cobb.

April 1. Office of Dr. B. G. Wenker; essayist, Dr. Ernst Busch; subject, "Methods of Treating Septic Teeth;" discussion opened by Dr. B. G. Wenker; office incidents, Dr. C. S. Grant.

PROGRAM OF THE ISAAC KNAPP DENTAL COTERIE, OF FORT WAYNE, IND.

Officers, 1899: J. E. Waugh, President; Nellie B. French, Secretary; J. M. Rosenthal, Treasurer.

Program Committee: J. S. McCurdy, R. S. Viberg, S. B. Hartman.

January 10. Residence of Dr. Mungen. Address, "Pathology," G. E. Hunt, M. D., D. D. S., Indianapolis, Ind.

January 20. Residence of Dr. Waugh. Anniversary meeting.

February 9. Residence of Dr. Shryock. Paper, "Removable Facings, Crown and Bridge," Dr. Shryock; discussion, Dr. Mungen.

March 9. Office of Dr. Jonnson Paper, "True Ethics versus Caste," Dr Johnson; discussion, Dr. Mason; clinic, Dr. Rabus.

April 13. Office of Dr. Rosenthal. Paper, "Our Profession," Dr. Rosenthal; discussion, Dr. Viberg; paper, "The Use of Rubber Dam," Dr. Mungen.

May 11. Office of Dr. Mason. Paper, "Two Years a Member of the Board of Dental Examiners," Dr. Mason; paper, "Roentgen Rays in Dental Practice," Dr. McCurdy.

June 8. Office of Dr. Brecheisen. Paper, "As Dentists, be Charitable," Dr. Brecheisen; discussion, Dr. Waugh.

July 13. Office of Dr. H. C. Sites. Paper, "Malnutrition," Dr. H. C. Sites; discussion, Dr. Coyle; paper, "Crystal Gold, and Soft Gold Foil," Dr. Hartman

October 12. Office of Dr. Viberg. Paper, "Pathology of the Dental Pulp," Dr. Viberg; paper, "Specialties in Dentistry," Dr. French.

November 9. Office of Dr. E. F. Sites. Paper, Dr. Sites; paper, "Inflammation," Dr. Waugh; discussion, Dr. Hartman.

December 14. Office of Dr. Porter. Clinic, Dr. Coyle; paper "Method of Filling Flattened Root Canals," Dr. Porter.

OBITUARY.

DIED.—On February 6, 1899, at 176 Ashland Avenue, Chicago, Emma Jean Brophy, beloved wife of Dr. Truman W. Brophy.

The sad bereavement which has thus fallen upon Dr. Brophy must bring to him the heartfelt sympathy of the profession everywhere. Mrs. Brophy was no ordinary woman. She was one of those pure minded, lovable personalities, shedding a beneficent influence over all with whom she came in contact. Hers was a life devoid of the slightest trace of narrowness or selfishness—a life spent for the good of others more than for her own good. She was the highest type of that kind of woman who prove the surest saving grace of our common humanity, a motherly woman broad enough in her sympathies to take within her heart the sorrows and joys, the sufferings and fears and tears and smiles of her fellow creatures. She was never happier than when doing some loving service for others. In her home she was something more than mistress; she was the sweet pervading essence which colored and formed the daily lives of the ones she loved. Rigid in adherence to the right in her own conduct, she was infinitely charitable of the lapses of those weaker than herself. The world is better for her having lived in it and while her death comes as a penetrating grief to the bereaved ones who cherished her affection as the most blessed possession of their birthright, yet her influence for good may not be numbered by her days. The memory of what she did and what she was will live in the hearts of family and friends as a constant benediction long beyond the common span of man's allotted life.

C. N J.

THE

DENTAL REVIEW.

Vol. XIII. CHICAGO, MARCH 15, 1899. No. 3

ORIGINAL COMMUNICATIONS.

Pyorrhœa Alveolaris.*

By M. L. Rhein, M. D., D. D. S., New York, N. Y.

Pyorrhœa alveolaris describes a purulent discharge from the lveolar region. It is to-day the name most generally used to esignate any form of pathological condition of the pericemental issue, which, if neglected, after a certain lapse of time will be arked by more or less purulent discharges, and finally result in ie loss of the teeth affected. It is impossible not to recognize ie value of certain names that various men have endeavored to troduce as a substitute for the term pyorrhœa alveolaris, because ey all describe certain forms of this pathogenic condition very early. The fact that each of these names has its limitations to a w of the numerous types of this disease renders necessary a eneric term. The name pyorrhœa alveolaris is to-day in use by large majority as indicative of the entire field covered by the dis-se and can always be more clearly defined by the addition of oper adjectives where the etiology is understood.

The exciting cause of pyorrhœa alveolaris is invariably some cal irritation which, not being removed, sets up a condition of flammation which prevents nutritive repair of the diseased peri-mental tissue. This condition becoming permanent, results in te continued liquefaction of these tissues subject at a certain age to infection, at which period the process of retrograde meta-orphosis and consequent destruction of the entire pericemental sue is more or less rapid according to the resistive energy of the dividual's vitality.

*Read before the Chicago Dental Society, February 3, 1899.

The disease may be divided into two general classes: One where the exciting cause is practically the only cause of the disease, and which makes the condition purely a local trouble. This form may be called pyorrhœa simplex in contradistinction to the other class, pyorrhœa complex, where there is a predisposing cause back of the local irritant.

Pyorrhœa simplex is a form of this disease to which it is my purport to give very little attention this evening, though it is impossible to pass it by without some consideration. Having once begun to destroy the pericemental membrane, if allowed to progress without proper care and treatment, its results, as far as the loss of the alveolar parts are concerned, may be as destructive as that produced by any of the graver forms of this trouble. Pyorrhœa simplex is seldom seen early in life except as the result of traumatism. Later in life lack of attention to the proper hygienic care of the mouth and the consequent encroachment of salivary calculi against the peridental membrane is perhaps the most common cause. "Dentistry up to date" as practiced by a large class of incompetent men bears the responsibility of being the cause of a large proportion of the cases of pyorrhœa simplex. This may be illustrated more clearly by the mania which has overridden the profession for the past few years, and is happily now on the wane, for placing bridge work in every conceivable place. An ill fitting cap, the unnecessary use of ligatures, injudicious wedging, badly fitting plates, are a few instances of the frequent causes of attacks of local pyorrhœa which may be laid at the door of the dentist himself. Similar attacks are also liable from any traumatic cause, such as a broken toothpick left between the teeth, a blow, pistol shot, a fractured tooth, etc. A great deal has been written at various times about the danger of pyorrhœal infection extending from an affected tooth to others in the same mouth, but a close observation of many cases of local pyorrhœa due to traumatic origin, has clearly shown that the injured tooth or teeth are the only ones that are ever involved.

Pyorrhœa complex. Although in all forms of this disease our chief duty is to keep the mouths of our patients free from any exciting causes and to reduce all conditions of inflammation, still where there is a predisposing cause which in itself is productive of the local inflammation and the irritation against which we are contending, this predisposing cause in such cases becomes *the* cause. I

such cases all our efforts at purely local treatment are bound to fail in effecting any permanent results, unless this predisposing cause is either removed or checked. In fact, in these cases the local pathogenic manifestations known as pyorrhœa alveolaris is only one of other results of this general interference with a proper equilibrium of the circulation. There is scarcely a vital disorder of any consequence which does not more or less interfere with the proper nutrition of the body. The extent of nutritional disturbance will invariably regulate the degree of severity of the local manifestation.

In order to properly appreciate this malady and to give the proper professional service to patients suffering from the disease, it becomes our first duty to discriminate as to the form of trouble which presents. A proper diagnosis between pyorrhœa simplex and complex must first be settled before intelligent treatment can be commenced. It is unnecessary for me to enter into detail as to the manner of diagnosing a case of pyorrhœa simplex by exclusion, except to say that every possible functional disturbance or toxæmia should be eliminated before any such diagnosis can be adopted.

The importance of a proper diagnosis can perhaps be more properly appreciated when we remember that our prognosis depends entirely upon the diagnosis which is made. To illustrate: A patient suffering in the last stages of diabetes or tuberculosis, etc., would present a very deplorable condition of the mouth. Having made our diagnosis, the prognosis would be so bad that no treatment other than the simple alleviation of local irritation would be attempted. No hope for any better result could be entertained. This is one of the many reasons why it is important that the forms of pyorrhœa complex should be classified according to the predisposing disease in each case.

In August, 1894, at the meeting of the American Dental Association, held at Old Point Comfort, Virginia, I presented a method of classifying these forms of the disease which later has been practically followed out by Prof. W. D. Miller, of Berlin, in his "Textbook on Operative Dentistry." This classification is made by simply prefixing to pyorrhœa an adjective stating the name of the disease which is causing the pathological symptoms in the oral cavity, as "gouty pyorrhœa," "diabetic pyorrhœa," etc. It is unnecessary to enumerate the subdivisions that might be listed, as they

embrace all causes that may disarrange nutrition. In a paper such as this it is impossible to enter into the detail that is necessary in order to clearly appreciate each type of this disorder. There is comparatively as great a difference between tubercular pyorrhœa and pregnancy pyorrhœa as there is between tuberculosis and pregnancy. Almost as wide a difference separates gouty pyorrhœa from anæmic pyorrhœa. All that can be done in this brief paper is to generalize and illustrate the differences that exist by citing some particular cases.

Most forms of the disease are accompanied by deposits of concretions upon the roots of the teeth of varying consistency and different compositions. These deposits vary greatly according to the form of the disease; and again there are some forms where no deposits are found. Such a condition is found in liparous pyorrhœa depending on a fatty infiltration of the pericardium, in which condition there is undoubtedly found more or less lipacidæmia. Such a condition can be perhaps better understood by giving the history of a case from practice:

Mrs. S. presented in February, 1887, for treatment for "loose teeth." Married; age about thirty-five; childless. Local examination showed thirty-two teeth in normal position with perfect occlusion of all the teeth. No tooth had ever been filled, in fact, it was her first visit to a dentist since childhood. Except a small buccal cavity in the third right superior molar no defect was found upon any tooth. As far as lay in her power she had been scrupulously careful in reference to maintaining a cleanly condition of the teeth and mouth. No deposits of any kind could be found upon any of the teeth, nor upon the roots, although there were pyorrhœal pockets extending half way up the roots on every tooth in her mouth. Slight pressure upon the gums would produce a whitish serous exudation from these pockets. She was very stout, in fact weighing over two hundred pounds, and was sent to me by her physician with the statement that she was under treatment for fatty degeneration about the heart. This medical treatment at that time consisted mainly of long, rapid walks, early in the morning, with the free use of plenty of water and salines. In the oral cavity ordinary escharotic treatment, followed by stimulating and soothing application was pursued. There followed a very marked improvement in the local symptoms. This was supplemented by instructing the patient in the proper manipulation of the brush so as to massage the gum

over the roots as much as possible. Treatment was followed up at intervals for over a year, but without a thorough healing of the pockets, although their depths had been greatly reduced. In the spring of 1888 the patient went abroad and at Marienbad placed herself under general treatment. I did not see her again until 1890, when I found her weight very much reduced and she considered herself practically cured. All the local symptoms had entirely disappeared and no trace of any pyorrhœal pockets could be found. A record of pyorrhœa cured by constitutional improvement. I had an opportunity in the summer of 1898 of again examining the mouth of this patient and found everything in a normal, healthy condition.

One of the most remarkable characteristics of pyorrhœa complex is the fact that it makes its appearance as one of the earliest symptoms of the disease of which it is a result. The other portions of the body which soon exhibit manifestations of malnutrition are the nails, the hair, the skin and the cornea of the eye, but none of them earlier than the pericemental tissue. In a paper entitled "Studies of Pyorrhœa Alveolaris," published in the *Dental Cosmos* of March, 1888, I called attention to this fact by stating: "The gums and peridental membranes being fed by about the most remote portion of the blood tracts, it is no more than reasonable to suppose that these organs should be the first to exhibit symptoms of a lack of nourishment in their elemental corpuscles." This feature is a very valuable aid in diagnosing the true cause of the trouble, especially in the early stages when the general symptoms have not been very marked. It frequently falls to the duty of the conscientious dentist to be the first person to call the patient's attention to the beginning of some serious constitutional disorder. A careful observation will show clinical features in the local symptoms of Bright's pyorrhœa that appear in no other form. By analogy, this undoubtedly holds good in every form of pyorrhœa complex that exists and has been practically demonstrated by the writer in numerous cases. The unfortunate phase of this subject in our profession has been that definite authorities who believe in constitutional cause of pyorrhœa alveolaris have attempted to confine it to certain particular diseases.

Prof. Pierce in the extremest views which he gave forth as to uric acid being the cause of pyorrhœa left open so many loopholes to possibly obscure the serious role which uric acid plays in a

large number of forms of pyorrhœa. Uric acid—or, to be more exact, quadriurate—is a regular constituent of the blood. According to the latest researches it is safe to assert that uric acid is the result of the disintegration of the albuminous substances of the body, especially of the nucleins. Consequently, whatever should give rise to a greater form of metabolism, whether food, medicine, poison, or disease, would insure a greater amount of uric acid formation in the blood. As long as the kidneys perform their function in a normal, healthy way and carry off these products of metabolism trouble does not ensue. The role which uric acid plays in general functional disorders may be divided into two types: First, where there is an excessive formation of uric acid in the system as is found in gout. In these cases local disturbances are produced because all of this excess of uric acid is not at all times eliminated. When uncomplicated by disease of the kidney itself, general treatment is most efficacious. Second, where, through disease of the kidney itself, there is retention of uric acid in the system without necessarily any excessive quantity being formed. These are by far the graver forms for treatment and are the most difficult of diagnosis, because urinal examinations demonstrate very little. It is unnecessary at this time to take any position as to how forms of these quadriurates reach the roots of the teeth, but the clinical fact remains that in certain cases of this class are met some of the most painful types of pyorrhœa alveolaris and the most difficult of diagnosis, where no apparent lesion at the gingival border exists, but where we find hard, flinty deposits near the apices of the roots. In these cases our chief reliance for diagnosis must depend not upon examinations of the urine, but upon examinations of the blood itself.

If theorizing is at all in order, I would quote from a paper of mine on the "Oral Expressions of Malnutrition," published in the *Dental Cosmos* of June, 1896: "Following along the line of Ebstein's theory, we can readily believe that on account of this deficiency of elemental corpuscles in the pericemental tissue a necrotic area is set up; a hyperacidity of the system being present at the same time, it follows that there is a strong tendency for the uric acid in the circulation to be deposited in this acid, necrotic area."

It is a well-known clinical fact that hyperacidity of the oral cavity is a marked feature of those forms of pyorrhœa where seru

mal deposits predominate. This hyperacidity is unquestionably due to the lack of a proper alkalinity of the blood, and it has been thoroughly demonstrated that this lessening of the alkalinity of the blood favors the deposition of uric acid in the form of urates. There is no reason why this deposit should not occur on the roots of the teeth as well as in the phalangeal articulations. Assuming these facts to be as represented, there can be no question but that in all cases of functional disturbance, where, through disease of the kidney itself, elimination of uric acid is more or less incomplete, or in those cases where there is a large overproduction of uric acid, the urates become one of the important factors of local irritation and resulting inflammation.

One of the strongest opponents of Prof. Pierce has been Dr. Talbot, of Chicago, who, if I have properly comprehended him, has studied the forms of neurotic pyorrhœa and has endeavored to make some form of nervous disorder responsible for every type of this malady. Credit is due to Dr. Talbot for calling attention to the atheromatous condition of the capillaries in the pericemental region in severe types of pyorrhœa. It is not my wish to underestimate the number of cases of pyorrhœa alveolaris which owe their origin to nervous disturbances, but it is relatively hard to fix upon any exact ratio of the number of these as compared with other forms of pyorrhœa. It is very likely that their number is greater than is generally believed.

While considerable attention has been given in these few remarks to the influence of vital disorders as a predisposing cause for various forms of pyorrhœa, we should not lose sight of the important role played in this direction by poisons irrespective of whether the general condition is good or not. Mineral poisons sometimes administered with remedial intent, as mercury or bismuth, or the gradual absorption by the individual of some substance as lead, frequently is the direct cause of an attack. In this connection our attention may well be directed for a moment to a class of cases that are distinctly toxic pyorrhœa and have frequently been very difficult to diagnose. In these cases there is found a lack of tonicity of the muscular coats of the intestines and considerable retention of fæces accompanied necessarily by absorption of more or less virulent toxines. My attention was first called to this condition from a case wherein the experience of clinical observation first led me to assume that the disease present was of the complex

type; but the most careful medical examinations, repeatedly made, failed to find any distinctively functional disorder, until this clew was followed up. Treatment involving not only the toning up of the intestines but also rendering the contents thereof nontoxic, was followed by the most gratifying results. Since then, my attention has been directed to numerous instances of the absorption of intestinal toxines as the cause of pyorrhœa alveolaris, and it is hoped that this attention drawn to the subject will be of some value to others in the treatment of some obscure cases.

Of all the forms of pyorrhœa that have come under my notice in which the conditions, from a local standpoint, have been most serious, and where the prognosis in contradistinction has been most favorable, none have played so prominent a role as those owing their origin to some form of anæmia. It is remarkable how little attention has been given to this form of the disease and how common it is. It is frequently met as a plain, general anæmia, owing its origin to no particular source, and again we find the anæmic condition due to a functional disease of some special organ. The control of the general condition invariably brings about an easy cure of the local symptoms if too much of the pericemental attachment has not been destroyed. This condition is more frequently met among females and is often concomitant with uterine disorders. An illustration of such a case may be interesting: Miss F., spinster age forty-nine, presented herself in December, 1896, for treatment for pyorrhœa alveolaris which was manifest in the lower maxilla, the upper teeth with two exceptions being artificial. Pressure upon the gums produced the most copious discharge of pus from the socket of every lower tooth. Her dentist had informed her that all treatment for the preservation of these teeth would be useless, and that their loss was only a question of a short time. She came to me in order to find out whether I could give her any reasonable hope for the preservation of her teeth. The patient was thin emaciated and careworn in appearance, and I was at once forcibly reminded of the anæmic condition present from the extreme pallor of the gums, lips and eyes. After a careful medical examination had been made the functional disturbance was narrowed down to uterine troubles and she placed herself under the care of Dr. F. N. Vineberg, who furnished me with the following résumé of her condition and subsequent operation:

"January 13, 1897. Patient first consulted me. Has had

uterine trouble for the past fifteen years. Has been treated from time to time, with temporary relief. In addition to pain in the right groin, back and down the the right thigh, she suffers from frequent micturition. Examination disclosed the right kidney prolapsed to the line of the umbilicus. Uterus in retroversion of third degree. Right ovary prolapsed and enlarged to the size of an English walnut. The cervix hard, covered with erosions, and enlarged nabothian follicles. She was removed to a hospital and on February 3, 1897, a laparotomy was performed. Removed right ovary and tube. Ovary size of an English walnut and cystic throughout. Left tube and ovary apparently normal and left intact. Removed a small fibroid in anterior wall of the uterus. Sutured defect in wall of uterus with catgut. Ventrofixated uterus with two catgut sutures. Recovery uneventful, primary union of abdominal wound. March 6, uterus in good forward position, health excellent."

After the patient returned home in the spring of 1897 local treatment was instituted with the most satisfactory results. All concretions being removed from the roots, one application of a twenty-five per cent solution of trichloracetic acid introduced into the pyorrhœal pockets of not over two teeth at a time was sufficient for the thorough healing of each pyorrhœal pocket. Since then the patient has given especial care to proper attention to hygienic measures, not only local but general; and as a result her general condition has visibly improved, so that she has lost the careworn expression and has gained materially in avoirdupois. There is a large quantity of salivary calculus that deposits on her teeth, and which has to be removed about every four months, but there has been no return of any distinctly pyorrhœal condition.

A frequent complication of any form of pyorrhœa alveolaris is an alveolar abscess. This is not only very prone to occur but is very difficult of diagnosis, and rarely suspected, because the purulent discharge from the abscess finds a direct vent through the pyorrhœal pocket. On this account it is essential in the successful treatment of this trouble to be always assured that the vitality of the pulp is unimpaired, and, if there is any question as to its vitality, it is far better to remove a living pulp from such a tooth than to incur the risk of having the pus from an alveolar abscess constantly draining through a pyorrhœal pocket, which, under such circumstances, you are ineffectually attempting to close up.

It has often been cited by advocates of the theory that all conditions of pyorrhœa are purely local diseases; that the extraction of the teeth is sufficient to cure the disease. Never having heard this bold statement contradicted, I take this opportunity of stating that numerous cases of pyorrhœa have come under my observation where the removal of the tooth in the diseased socket was not in itself sufficient to cure the disease in the socket.

It has been my aim to call your attention to the fact that, leaving pyorrhœa simplex aside, the forms of pyorrhœa complex that we may meet are only limited by the number of ills that humanity is heir to. Attention is also invited to the fact that each form of pyorrhœa complex presents clinical symptoms so separate and distinct that they can easily be recognized by the observant dentist. His duty it is to call the attention of his medical confrères to their diagnostic value in incipient functional disturbances.

Treatment. It is not my intention to consider extensively the details of local treatment, except to state some special forms of practice which have perhaps been distinctive with myself.

The necessity for a careful removal of every form of deposit, although disputed by a few, has been recognized to be of primary importance by the majority of men who treat this trouble. Your attention is called to the danger of handling too many teeth at one sitting and producing too much irritation instead of benefiting the patient. The form of escharotic used matters but little as long as the superficial tissues of the pocket are thoroughly removed and the parts stimulated without undue severity. They should always be left covered with some soothing application which should tend to keep the entrance to the pockets sealed for as long time as possible. A favorite application with myself has been the following prescription, which is not original:

Purified gum. lac	135.0
" benzoin	5.0
Carbol. acid cryst	50.0
Oil cinnamon	3.0
Saccharine	3.0
Alcohol	q. s. to make ½ litre.

By allowing this to dry for a few moments it will be found to keep the pockets sealed for many hours as well as being beneficial from its therapeutic properties. So much has been written in reference to the nicety of detail as regards localized treatment that it is almost safe at the present day to say that the treatment of

any individual case from a local standpoint must be left to the good judgment and sound common sense of the dentist who has the case in charge. An even occlusion of each and every tooth in the jaws is a *sine qua non* for success. The most difficult cases where other conditions have been made favorable are those where so much of the alveolar process has been lost that there is very little attachment left to keep the tooth in its socket. In many cases what attachment remains can frequently be improved by removing the pulp from the tooth by means of cocaine anæsthesia and thus diverting the portion of the circulation which has been nourishing the pulp to the pericemental tissues. This is, of course, only of value where there is a decided lack in the nutritional supply of the capillaries feeding the pericemental tissues; and nowhere does the good judgment of the operator come in more demand than when he determines that this course of procedure should or should not be pursued. Much has been written in the last few years about the value of splinting teeth which are too loose to stand unsupported in their own sockets. For temporary purposes ligatures, whether of silk, flax or metal, are valuable, but their durability is only a question of time, however skillfully they may be employed, and frequently much harm is done by the imperfect manner in which they are adjusted. No more injudicious treatment can be imagined than a practice which has been only too common—that of banding loose teeth together in order to obtain the benefits of this support. It is well nigh impossible to place bands around teeth without making them receptacles for the lodgment of débris and fermentable matter and consequently nests for the better breeding of the already too numerous bacteria. In a paper previously referred to, published in the *Dental Cosmos* of March, 1888, I described a method of splinting teeth together by means of a combination of triangular wire lying in a groove cut in the occlusal portions of the teeth and held solidly in position by gold foil packed solidly under, around and on top of the wire, restoring in this manner the original conformation of the teeth except that the gold filling follows the triangular piece of iridio-platinum wire across the interspaces so that the teeth are solidly joined together at the occlusal angles. When a tooth is missing, or even a portion of a tooth, this can be attached to the wire before being permanently fixed in position.

While no false hopes of success should be held out to patients where the prognosis is of such a nature as to see the futility of

much treatment, still, all our treatment is rendered unavailing unless considerable attention be given to the fact that constant coöperation is required from the patients themselves so far as the local treatment is concerned. They must be taught like children how to care for the oral cavity so as to insure the best hygienic conditions attainable at all times. The same advice and teaching is not always applicable for all cases, and here again enters the question of the sound judgment and good advice of the dentist under whose treatment the teeth have been placed.

Address of Major Fred A. Smith, C. S., U. S. V., (Captain 12th U. S. Infantry,) at the Banquet of the Chicago Dental Society on its Thirty-fifth Anniversary, Held at the Palmer House, Chicago, Ill., February 4, 1899.

Mr. President and Gentlemen:

I have been invited by your worthy president to relate some of my personal experiences and observations during our war in Cuba, which I have put in a narrative form.

In the early part of April orders were issued to concentrate the regular army at New Orleans, Mobile and Tampa, and we left our post April 19, under orders to proceed to New Orleans.

Upon arriving at Nashville, Tenn., the evening of April 21, orders were received changing our destination to Chickamauga Park.

We were among the first regiments to arrive at that place, and with the exception of the faulty condition of having but one single track railroad from Chattanooga to the camp, about eleven miles, I was very favorably impressed with the plan of rendezvousing the greater portion of our army on that historic ground, as its hitherto scattered condition made it essential, to its greater effectiveness, that it be consolidated, drilled, instructed and officered into brigades, divisions and corps; an experience of like nature not having occurred to our army since the close of the war in 1865.

Much has been said and written about Chickamauga Park. In my opinion, it was a most favorable place to mobilize an army, preparatory to an active campaign. After the departure of the

*We take pleasure in publishing the above, showing that army officers are not mere machines, but are alive to things around them and are able to describe them in a most interesting manner.

regular troops, it became the rendezvous for a large number of volunteer troops. That it became overcrowded and in a bad sanitary condition later in the summer, is admitted, but the conditions of the camp and the health of the troops were the result of negligence, carelessness and inexperience on the part of the men and the officers in immediate command of them, until it became so bad that the only effective remedy was to move the troops to localities where proper sanitary measures could be inaugurated and carried out; in other words, the water and all its sources had become so polluted, that it became unsafe for use unless boiled; that typhoid fever was brought into camp by incoming regiments, and also resulted from the unsanitary state of the camps and camp sites.

In less than three weeks from the time the regular troops arrived at Chickamauga Park they were ordered to assemble at Tampa.

In my opinion, the selection of Tampa as a point of concentration previous to embarkation was one of the gravest mistakes of the war. It is a place of no resources, no suitable camping grounds, and nothing but sand everywhere. Miles of track became blockaded until it became so serious that those in authority threatened to seize the railroads in the name of the government, as they were continually warring with each other, and congestion and confusion became worse than confounded.

The movement of troops and supplies to that point was like pouring water into a barrel through the bung hole and letting it run off at the spigot; an overflow is a necessary consequence.

The equipment and supplying of the army was much delayed and full of annoyances.

Each of the available and convenient seaports along the Atlantic coast might have been utilized for embarkation with good advantage, and a future rendezvous appointed at any designated point, say Key West.

Volunteer troops were being assembled in their respective States, and should have been retained at their various state encampments until all the preliminary work incident to their equipment, instruction and discipline had been accomplished, which would have taken about sixty days; but instead, they were rushed to Tampa until it (the barrel) could accommodate no more, when the overflow was diverted to Jacksonville, and later to Chickamauga Park.

I have only time to mention the unprepared condition in which these troops arrived at these respective places, unarmed, uninstructed, without clothing or equipments, and totally inexperienced in caring for themselves, all of which made the more confusion.

The war department was urgently hastening the organization of the Cuban expedition, and finally, early in June, peremptory orders came to Gen. Shafter to proceed at once with what troops he had in readiness, but with not less than 10,000.

On June 8, a hurried departure was made from Tampa, with such troops as were in readiness, to embark on transports at Port Tampa.

Although every precaution had been taken to have the movement to Port Tampa made in a systematic manner, very soon after it commenced everything was thrown into the greatest confusion by a general blockade on the single line railroad, and much delay was occasioned thereby.

The headquarters went on board the transport Seguranca that afternoon. Troops had been embarking all day, and everything hurried for the departure, which was to be about midnight, when the tide should serve.

The personnel of the expedition was 773 officers and 14,564 enlisted men.

About 11 P. M. a telegram was received from Gen. Miles, then at Tampa, to the effect that three Spanish vessels were reported within six hours of us, and with instructions to have such of the transports as had pulled out in the bay, return to the wharf. Some of the transports had already started, but were overtaken and ordered to return.

Such startling and apprehensive news for the safety of the transport fleet caused considerable consternation and excitement and made us feel that we were really approaching the dangerous element of war.

This delay caused much trouble, as the animals had to be unloaded from the transports, as their close and contracted quarters rendered this necessary. However, while waiting to make another start, additional supplies and equipment for the expedition were taken on board, and other means taken to perfect the equipment of the fleet.

The responsibility for the "Phantom Spanish Armada," which caused such alarm and so much unnecessary trouble, has never been quite fully determined.

It is said that the State department received an intercepted cable message from Madrid to Gen. Blanco at Havana, saying that a Spanish cruiser, accompanied by two gunboats and a collier, or transport, had been dispatched to Havana. About the same time the navy department received reports from the blockading squadron, indicating the presence of strange Spanish ships in Cuban waters.

The war department was apprised of these developments, and immediately sent orders to Tampa to hold the expedition, pending investigation.

On June 14 another start was made, the transports sailed out separately, the headquarters ship leaving Port Tampa about 10 A. M. After the fleet left Egmont Keys, at the entrance to Tampa Bay, it was organized into three columns, with intervals of 400 yards, and distances, from front to rear, of 1,000 yards, with a naval vessel at the front and rear of each column, and others on the flanks. The sight of this fleet, when properly organized in the order of sailing, is one long to be remembered, and such as has never been witnessed before in this country. When I sailed into New York harbor, a little more than two months later, I thought what a difference there would have been had that fleet left New York instead of Port Tampa; what an ovation it would have had, and how its departure would have been witnessed by thousands of people, who would have lent their presence as an escort until well out to sea; but in the far away and inaccessible land of the Florida peninsula, it was accompanied by but one or two small vessels, bearing some of the friends and relatives of those who were going to the unknown future.

During the night of the 16th, when off Key West, we were joined by other naval vessels, when the fleet consisted of thirty-seven transports and fourteen naval vessels.

The order of sailing was in charge of Capt. Taylor, of the battle ship Indiana, and communicated to the captain of each transport, so that they might know and keep their assignments and order, as far as practicable; each transport being designated by a number painted upon each side of the bow and stern of the vessel, and also upon the smokestack.

At night the fleet would become somewhat disarranged from the regular order, but at early dawn would resume their assigned places.

The dispatch boats were kept busy running about the fleet, giving orders to the captain of a lagging or erratic transport, for be it known that the rate of progress is only that of the slowest craft.

Signals were exchanged between the different vessels by flags during the day, and at night it was a beautiful sight to see the naval vessels communicating with each other by their electric system, and combination of red and white lights arranged aloft. The transports had no means of intercommunication at night.

The weather was most favorable, and the voyage made without accident or particular incident, excepting the losing of one of the two lighters in tow of the transports. It was very fortunate that the other remained, as it afterward played an important part in the landing of stores on the Cuban shore.

During the entire campaign, I have often ascribed the freedom from accident and mishaps, by quoting the expression, "The Lord was on our side," and highly favored us.

When we started, our ultimate destination was known to but few, and there was plenty of speculation as to whether it was Cuba or Puerto Rico; whether we would go around the east or west end of the island; but on the 17th we knew that we were going to the north of Cuba, as we passed the Lobos Light that day. About 5 P. M., on the 19th, we passed Cape Maysi, the eastern end of Cuba, and on the 20th, arrived off the south coast, where we were met by Capt. Chadwick, of the New York, flag officer of Admiral Sampson's fleet, who boarded our ship; about 1 P. M., the same day, Admiral Sampson came on board. We were then immediately off Santiago de Cuba, and not a mile away from Morro Castle, which we beheld for the first time, with the Spanish flag flying defiantly from its walls.

As we passed the mouth of the harbor, the top works of the sunken Merrimac could be seen in the entrance to the harbor. The fleet, with the exception of the headquarters ship (Seguranca) was ordered to remain behind out of sight.

We steamed along about twenty miles to the westward of Santiago, where General Shafter and Admiral Sampson went ashore to an insurgent camp, where a council was held with General Garcia.

The landing of the two commanders was one of the most striking and dramatic pictures of the war.

The high mountains rose from the sea, and at the edge of the

water a grove of cocoanut palms made a background for the Cuban troops. As the boat containing General Shafter and Admiral Sampson approached the shore the Cubans dashed into the water up to their waists and came toward them, cheering and shouting, and the officers, on horseback, surrounded the boat and saluted the two men whose coming meant the freedom and independence of their island.

As we sailed along in plain view of the southern coast the places for a prospective landing looked very formidable—high bluffs and mountains densely covered with a tangled growth of bushes, the Socapa Battery on the west, Morro Castle on the east of the entrance to the harbor, and another battery about three miles further to the east, at Aguadores.

We coasted around all night of the 20th, and on the 21st Admiral Sampson, with his flag officer, Captain Chadwick, of the New York, General Joe Wheeler, and General Castillo, of the Cuban army, came on board for a conference with General Shafter, and, a place having been selected, arrangements were made for a forced landing of our troops.

At daylight on the 22d of June the fleet was rendezvoused before Daiquiri, about twelve miles to the eastward of the entrance to Santiago harbor, which had been selected as the point of debarkation.

At this point there is a slight indentation in the coast, but no harbor, anchorage or wharves which could be utilized for the landing of troops, except a very small one, capable of being used by small boats.

At Daiquiri are the machine shops, a few houses, and the iron pier of the Spanish-American Iron Co. Behind these rise the mountains, and on a steep spur was a Spanish blockhouse.

Preparations had been made to land the troops in all the available small boats from each fleet, towed by the navy launches. The 2d Division (General Lawton's) was to be the first to disembark, followed by General Bates' brigade, then the dismounted cavalry (General Wheeler's Division).

The 1st Division (General Kent's) was ordered to make a feint of force of landing at Cabanas, about two and one-half miles to the west of the entrance to Santiago harbor, with about ten of the transports, lowering boats and making apparent preparation for disembarking a large body of troops.

It was about 9:45 A. M. when everything was ready, and a fire was opened by the New Orleans, Detroit, Castine, Suwanee and Wasp, to clear the way for the landing of the troops. The bombardment lasted about fifteen minutes, and thrilled us all with excitement, as the hills sent back the reports of the guns in thundering echoes, and the effects of the shells could be observed against the mountain side, as the dust from the broken rocks and scattered bushes would fly in the air. It was watched with interest from the deck of the Seguranca, as it, being the headquarters ship, was well at the front, less than a mile from shore.

There was no return fire, and had any resistance been made from the deserted intrenchments, or blockhouses, our loss would necessarily have been very heavy. At the same time, General Castillo, with a thousand men coming from the eastward, assisted in clearing the way for an unopposed landing, by flanking out the Spanish forces at that point.

The Spaniards abandoned the place early in the morning, setting fire to the machine shop and some other property of the Iron Co.

At the same time the demonstration was being made at this point, naval vessels were bombarding other points along the coast for eighteen miles; the only reply anywhere along the line being at Cabanas.

At this point, the Texas had a long continued engagement with the west battery, and was struck by one shell which killed one man and wounded eight others.

Troops were being disembarked all day, about 3,500 being landed at 3 P. M. The surf was bad, and during the afternoon two colored soldiers were drowned while landing. General Lawton's Division, after landing, pushed out about four miles toward Siboney, and the next morning entered that place, the Spanish retreating before him without making any opposition, except firing a few scattering shots at long range. The Spanish were estimated at 600 and were followed by the Cubans, who harassed their retreat.

Siboney is about five miles to the west of Daiquiri, and, after its occupation, was made the base of supplies, and might have been selected in the first place with better results.

One word about the difficulties which were met in supplying the troops after their landing. They carried with them when landing, officers and men alike, their blanket roll, rifle, ammunition

and three days' rations ; nothing could be taken but what was carried on their person. As soon as the troops were landed, the animals were unloaded and caused to swim ashore. The unloading of ammunition and rations was then proceeded with, as far as the limited facilities and difficulties encountered would permit, which had to be done in small boats, and with one lighter. The trade winds would come up regularly about 10 A. M., after which time the surf would run high, interfering with the unloading; and as there was no anchorage for the transports, they would have to move farther out to sea, thus making the work more difficult. At no time was there a scarcity of provisions on shore, and this was due to the indefatigable energy of Col. J. F. Weston, Chief Commissary 5th Army Corps, who was equal to every emergency, and met them with a firm and happy determination. Owing to the daily rains, the roads to the front became heavy and impassable, and the distance between the troops and the base of supplies was always increasing. It was only with the greatest energy and perseverence that the front line was kept supplied, but no real shortage occurred, except that in some instances some particular portion of the rations might be missing for a short time.

On the 24th of June the fight known as Las Guasimas took place, about three miles from Siboney, on the road to Santiago, and about nine miles from where the troops first landed. The troops engaged were four troops each of the 1st and 10th U. S. Cavalry, and eight troops of the 1st Vol. Cavalry, popularly known as the Rough Riders, less than a thousand men in all, attacked by more than double their number.

The Spaniards had selected their position with care; the wagon road used by the 1st and 10th Cavalry and the trail over which the Rough Riders marched approached the scene of action like the two halves of a wishbone, the Spanish being at the meeting point. The enemy was so placed that they were able to see down the valley and cover the approach of our troops whichever way they came. In the desire to get at the Spaniards the advance was pushed considerably beyond the point indicated by the general instructions, and it was not the intention of the commanding general to bring on this fight.

The Spanish occupied a very strong and intrenched position on a high hill, behind breastworks of stone, and commanding the road over which the troops were advancing. The Spaniards, under

General Linares, opened fire from the thick brush, and had every advantage of numbers and position; but our troops soon drove them back, and sent them retreating into the intrenchments surrounding the city of Santiago. In this engagement our loss was one officer and fifteen men killed, and six officers and forty-six men wounded. This was the first battle in Cuba and was a great success, notwithstanding our fierce fight and considerable losses. It had the good effect of dispelling our hitherto preconceived notions that the Spaniards would not fight, but ran at the sight of our troops, and the moral effect of the intrepidity and gallantry of our soldiers on that day had much to do with our future success, as the Spaniards were surprised at the bold fighting qualities of our forces.

On June 29, General Shafter and staff disembarked and went to the front, and the following day, the 30th, the disposition for a general attack was made, the investment of the city being nearly complete.

To more fully understand the situation, I will enter into a brief description of the surroundings near Santiago.

Six miles from the sea, at the head of what is practically a salt water lake, lies Santiago, surrounded on all sides by high mountains. Two and one-half miles east of the entrance to the harbor is Aguadores, directly south of Santiago itself. Southeast of Santiago is San Juan, and about three miles to the northeast of this city is El Caney.

Aguadores, San Juan and El Caney are the outposts of the city on the east. General Shafter believed that Santiago would best be taken by compelling its capitulation by siege, but finally yielded to arguments in favor of attacking the place.

On the 1st of July, our forces had the city practically surrounded. The plan of attack comprised a joint assault by the fleet, and a part of the army at Aguadores at the sea, and a military attack alone at El Caney and San Juan hill, the fleet diverting the attention of the enemy by occasionally bombarding.

General Lawton's Division was sent to make the attack on El Caney; the dismounted cavalry had the center of the line near San Juan; General Kent and General Bates were on the left and General Duffield, with some of the fleet, at the seaside at Aguadores.

The history of this battle has been told many times, and

is familiar to you all. I shall do no more than make a few comments.

The general plan was that of a turning movement, swinging well out to the right, and passing through the village of El Caney, striking the left flank of the enemy, and, if possible, reach the northern side of Santiago, thus preventing the entrance of reinforcements into the city, and also the retreat of the Spaniards to the only places to which retreat was possible, San Luis and Holguin; the only obstacle to this flank movement was the village of El Caney, and it was thought by the commanding general that the capture of this place was a matter of easy accomplishment, but it lasted all day, and it was 4:30 P. M. before the stone blockhouse was captured, after a day of fighting with the most furious desperation on the part of the enemy, about 150 being taken prisoners out of a force of 1,500, the remainder being killed or wounded.

It was not intended that the engagement at other parts of the line should begin until El Caney was taken, but the troops moving to the front found themselves in a position where no alternative was left but to fight or all be killed, so at San Juan the troops became heavily engaged and drove the Spaniards back. General Shafter sent repeated orders for the troops at El Caney to move to their left in the direction of San Juan, but it was impracticable for General Lawton to comply until the place was taken and the enemy driven from it, as it would have left them in our rear. As soon as the fight at El Caney was over, General Lawton, with his division, marched all night on the 1st and a good part of the morning of the 2d, and finally took up a position on the right of the cavalry division, on a ridge facing the Spanish intrenchments, in front of Santiago, and about 1,500 to 2,500 yards distant from the city.

Firing was kept up the whole of the 2d of July by both sides, our troops having thrown up hasty intrenchments in many positions the night previous.

Those were terrible days, the 1st and 2d of July, particularly the night of July 1, with so many dead, dying and wounded, for whom little could be done. The Spaniards made an attack upon our lines on the night of the 2d, which was repulsed with very little loss to our side.

El Caney and San Juan were taken by infantry and dismounted cavalry, with very little effective assistance from artillery.

It was a storm of intrenched heights, held by veteran troops, armed with modern guns, supported by artillery; an unheard of thing in the annals of military wars.

Too much praise cannot be given our troops for their courage, gallantry and achievements on this occasion.

Our losses in these battles were 22 officers and 209 men killed; 84 officers and 1,199 men wounded; missing, 69; the latter, with very few exceptions, reported later.

On the 3d of July there was comparatively little firing on either side. It was my good fortune to be an eye witness of the great event of that day, the destruction of the Spanish fleet.

I had been on shore that morning, and was returning to the headquarters ship about 9 A. M. with Capt. Paget, of the British royal navy. I heard firing in the direction of Morro Castle, but thought nothing of it, as firing was of frequent occurrence in that direction by our navy.

The flagship New York had come to Siboney with Admiral Sampson, who intended to land and go to the front with his staff for a conference with Gen. Shafter. The steam launch was ready to take him ashore, when I observed the New York turn about and proceed with all haste in the direction of the firing.

We were then about seven miles from the entrance to the harbor. I then directed the captain of the transport to follow the New York, which we did.

The firing was very heavy, and from that distance I thought that possibly one of the Spanish fleet had made an attempt to run out of the harbor, little thinking that the whole fleet would make the attempt to escape in broad daylight.

As the New York steamed along at full speed the batteries at Morro Castle and on the west side of the entrance to the harbor fired repeatedly at her as she passed by, and it was a grand sight to see her sail majestically along apparently oblivious of the shore batteries, only eager to reach the combat going on further to the westward.

We were not far behind. From the bridge of the Seguranca, in company with Capt. Paget, of the English navy, and Lieut. Akiyama, of the Japanese navy, we soon saw that the Spanish torpedo boats had been run ashore about three miles to the west of the harbor. Within twenty minutes from the time they emerged from Santiago harbor, the careers of the torpedo boats, Furor and Pluton, were ended and two-thirds of the crew killed.

The Furor was beached and sunk in the surf; the Pluton in deep water a few minutes later.

The Gloucester rescued the survivors of these boats, and afterward those of the Infanta Maria Teresa.

You may have read how they came out of the harbor, the Infanta Maria Teresa, which was the flagship, leading, and turning to the westward soon became engaged with our vessels, which closed in on them, delivering a rapid and destructive fire, which soon silenced their guns, and sent them to their final destruction.

It was difficult to distinguish the vessels among the smoke, and the noise of the firing was loud and continuous during the heavy part of the engagement, which, though comparatively short, was furious throughout.

The Maria Teresa was forced to run in on the beach, about six and one-half miles, and the Oquendo about seven miles from the entrance to the harbor.

The Vizcaya was still under the fire of the leading vessels, but was soon set on fire and beached about fifteen miles from the harbor, burning fiercely.

There only remained the Cristobal Colon, their best and fastest vessel, and while I saw it disappear over the horizon, closely followed by the Brooklyn, Oregon, Texas, Vixen and New York, I feared that it might escape, and it was some time afterward that I learned that, at 1:20 P. M., she gave up, hauled down her colors, and ran ashore forty-eight miles from Santiago.

We were about two miles distant from the Maria Teresa and Oquendo, and could see with our glasses the crews crowding on the forward deck of the vessels to get away from the fire, and dropping over the sides to swim ashore, as it was some distance from where the vessels grounded, and a heavy surf was running inside.

It is reported that 600 Spaniards were killed and 1,200 taken prisoners. I am of the opinion that a very large number of those reported killed were either drowned or burned to death, for some days afterward numerous dead bodies could be seen floating around in that vicinity.

All the fleet had left the vicinity of the harbor, but the Iowa was finally ordered back to her blockading station.

One of the incidents of the day was occasioned by the Resolute, which passed us going eastward, as we were leaving Siboney,

but it soon returned, following us, blowing her whistle furiously, and, as I supposed, signaling to us some kind of an alarm of an impending danger; but we were so eager to get to the scene of the fight that I told the captain of our transport to pay no heed, but to go ahead. As she came on behind us, running quite near to Morro Castle, and discovering the victorious success of our vessels, her whistles were changed to those in number which indicate rejoicing, viz., three blasts. As she passed under the Socapa battery, to the west of the entrance to the harbor, she fired three shots at that battery, at the same time continuing to blow her whistle. This was too exasperating for the Spaniards, so they let go one of their largest guns at her; it was a good line shot, but the shell passed harmlessly over the Resolute and exploded with a tremendous report not far from our transport.

I learned afterward that the Resolute had seen a strange man-of-war approaching from the eastward, which turned out to be an Austrian naval vessel cruising in these waters without hostile intent, but the Resolute had mistaken the flag to be that of a Spanish man-of-war, as the flags of these two nations look very similar at a distance.

Knowing the depressed feeling in the army after two days of hard fighting, and also being aware of the fact, from official dispatches, that the commanding general had in contemplation the withdrawal of the army about five miles to the rear, I hastened back to Siboney, which I reached early in the afternoon, and sent the following dispatch.

"Spanish fleet ran out of Santiago harbor about 9 A. M. today. Terrific naval battle outside. Three Spanish cruisers and torpedo boats destroyed, run on beach and burned up. One Spanish cruiser still at large going westward, and greater portion of fleet in pursuit. I saw the cruisers and torpedo boats burning on beach. Signal fires on hills west of Morro Castle last night. The torpedo boats on beach about three miles, two cruisers about six miles, and third cruiser about twenty miles west of Morro Castle."

This was the dispatch which General Shafter in his report says electrified the army. When the news reached the front, which was during the period of truce, the regimental band, which had managed to keep its instruments on the line, played the "Star Spangled Banner," and "There'll be a Hot Time in the Old

Town To-night," and the men cheered from one end of the line to the other.

I might have made my name famous if I had used my position to send the news to Washington. The officer in charge of the cables at Guantanamo, incidentally hearing of my report, sent a dispatch to Washington, which the authorities would not believe, and the President refused to allow it to be made public until the following confirmatory dispatch was received by him about midnight:

PLAYA DEL ESTE, July 3.

Siboney office confirms the statement that all the Spanish fleet, except one warship, was destroyed, and it is burning on the beach. It was witnessed by Capt. Smith, who told the operator. No doubt of its correctness.

(Signed) ALLEN,
Signal Officer.

On the morning of the 3d of July the battle on land was renewed, but the enemy had expended his energy in the assault of the previous night, and the firing along the line was desultory, until stopped by Gen. Shafter sending a letter to Gen. Toral, demanding a surrender.

The cessation of firing, about noon of the 3d, practically terminated the battle of Santiago, all that occurred after that being in the nature of a siege, which followed.

The days following hostilities were days of suffering and work; suffering by the wounded, who were hauled in great six mule army wagons, or made their way as best they could to the hospitals in the rear. I saw a thousand men from time to time in the hospital at Siboney, and surgeons were kept busy day and night for several days after the battle.

The wound inflicted by the Mauser bullet is a humane one, and there were very few cases of amputation, probably not a dozen in all. A brother officer was shot through the left lung. When I saw him he was as smiling and buoyant in spirits as though nothing had happened. He commanded a regiment at San Juan, and was one of the bravest of the brave.

Courage and will power are the qualities necessary for a soldier to possess, and the will power is a great element in recovering from wounds or sickness.

Men go to war to fight. To fight, means to march, to go hungry, to get wet, and to suffer all kinds of discomforts.

That there were many blunders in the Santiago campaign which could have been foreseen and avoided, I will admit; but the wholesale criticisms indulged in by the sensational press are unwarranted, misleading and unjust in the extreme.

There was always plenty of commissary stores on the shore during the campaign, and the troops at the front were at all times supplied with hard bread, bacon, sugar and coffee; the great difficulty was in transporting them to the front.

The sick and wounded received every attention that it was possible to give them under the circumstances. The sufferings were not greater than accompanies any campaign, and complaints did not come from the front.

It is needless for me to dwell on the events following the battles of the 1st, 2d and 3d of July. The truce ended on the 10th, when the engagement reopened, the navy shelling the city. On the 11th, the surrender was again demanded, and the final capitulation took place on the 14th; the formal surrender on the 17th.

At this time sickness in the army was increasing very rapidly, as a result of exposure in the trenches, to the intense heat, and the heavy rains.

On the 18th, the Seguranca, on which I was still aboard, entered the harbor of Santiago, and it was a grand experience to sail in past Morro Castle, the Reina Mercedes on the beach a little farther in, which had been sunk by our navy as she was trying to come out; the Merrimac, with her smokestacks out of the water, but not an obstacle to the entrance to the harbor, as originally intended.

As we came to an anchor in the harbor, opposite the city of Santiago, I felt a spirit of exultation that our mission had succeeded, and I saluted my feelings with the whistle of the Seguranca. I went ashore that evening, and thought I would vary our hitherto monotonous fare on board ship by having a dinner on land. I went to what had been the Delmonico of Santiago, and all that our party could get to eat was one small fish, a piece of bread half the size of the ordinary breakfast roll, and four small pieces of meat, which, after I had eaten, I was convinced was horse meat; but we found some American beer in which we drowned the horse, and enjoyed the luxury of ice, which we had been without for some weeks. The whole city impressed you with a feeling of grandeur and squalor, and I was surprised to see

Spanish officers and soldiers walking about the streets with revolvers and side arms.

In talking with the inhabitants and Spanish officers, I was convinced that the Spaniards could have held out but a few days longer, from lack of food and general discouragement.

Now that success has attended our campaigns in Cuba, Puerto Rico and Manila, peace is going to bring new problems for this country, hardly less important than those of war, and the the very earliest of these will be military. We shall have to occupy, police and garrison temporarily, considerable possessions over the seas.

We shall have to acquire the new art of moving troops by sea, and supplying them over ocean routes. We shall have to master the problem of keeping troops in good health and spirits in a tropical climate, as well as that of dealing with an alien population.

There will be new work for every department of the army in the late colonies of Spain.

To meet these new and strange emergencies will be the most wholesome exercise for the nation, and will strengthen its powers and elevate its standards for the performance of domestic administration. The country was plunged into war totally unprepared, as far as its land forces were concerned; and as the lessons of the civil war were not heeded, it is to be hoped that the nation may profit by its recent experiences.

Criticisms are largely founded in mistaken conceptions of the realities of war, which never assume the ideal conditions laid down in text-books, and battles fought under such surroundings as those met with at Santiago resolve themselves into contests where the individual qualities of the officers and soldiers have a large influence on the result.

The shortcomings and inefficiencies of the army, now being so fully ventilated by the press, were foreseen and anticipated before the war. It is the fault of our system, but our army has come out of the fight with greatly enhanced prestige, since it is plain that, but for their irresistible bravery, General Shafter could never have won his victory or held the ground won. We must not overlook the weakness and great tactical blunder of the enemy in taking the defensive instead of the offensive, and no one can study the campaign without thankfulness that our foe was as incapable as he was. A swift Spanish attack, a careful using of

their defensible territory, a combating of every inch of the attack the minute our troops were out of range of the ships' guns, might have easily made the story a very different and a very sad one.

The fruits of our victories are seen in the new position which America occupies before the world.

Removable vs. Fixed Bridge Work.*

By T. E. Turner, D. D. S., St. Louis, Mo.

This is an age of progress, and dentistry in common with many other sciences has kept well to the front; this is particularly so of dentistry in that branch of prosthesis known as crown and bridge work, upon the advent of which it was hailed as the great desideratum, the zenith in the replacement of lost dental organs was thought to have been reached; teeth without plates became a reality, and fad or hobby with many practitioners. Its limitations were not fully comprehended, its principles were not understood, still it was made to serve in all manner and conditions of cases; a few scattering roots or teeth sufficed for the replacement of a full denture.

No doubt enthusiasm for the new method led many conscientious practitioners to make grave errors of judgment as to its availability in many cases, while the unscrupulous make use of it in every case where the fee is forthcoming. Such practice must and is having its legitimate fruitage in the many failures we see to-day—and they are many—while the future promises to be still more prolific. Bridge work must be used with discrimination only after a thorough understanding of the conditions involved; the prognosis should be extremely favorable. But a reaction has begun, and bridge work is held in disfavor with many practitioners, while others condemn it entirely. Thoughtful conservative dentists are coming more and more to realize that this method has only a limited scope, which cannot be exceeded without limiting the duration of the work, and are using it less and less.

Such is the usual history of all things new; new methods, new drugs, new appliances etc., are introduced as panaceas for all failures and diseases; great things are promised, great results expected; they are greeted with enthusiasm; many forgetting to "hold fast to that which is proven," forsake the tried and known for the untried and unknown; after being tried they eventually fall into their

*Read before the St. Louis Dental Society, December 6, 1898.

proper sphere and are recognized as valuable additions to their respective departments, in case they prove to be so.

Bridge work thus in time will take its proper place as a method for the replacement of lost teeth; its limitations will be more fully understood and respected (by reputable practitioners at least); a few scattered teeth or roots will no longer be used to carry a full denture, it being contrary to true mechanical principle; nor will teeth affected with pyorrhœa be used as abutments, but in its proper sphere will be recognized as a legitimate operation, and the best method yet devised for the purpose for which it was intended, provided it be skillfully constructed in accordance with true mechanical principles; and yet, however skillfully constructed or properly placed, the result falls far short of the ideal. Certain defects are inherent in fixed bridge work, and cannot be eliminated, however well the piece may be constructed; it may conform to true mechanical principles, be correct from an æsthetic point of view and be within its proper sphere, yet it is a failure in some measure, for in the very nature of things it cannot fulfill all the requirements of an ideal bridge. In the above references to bridge work, the ordinary is meant, one continuous piece terminating with a crown at each end, the fixed or immovable bridge.

Some of the most prominent defects of this class of work are these: First. The difficulty of making repairs. When it becomes necessary to replace a broken facing, the result is usually unsatisfactory, if attempted while the piece is in position. If the bridge is to be taken off, the crown must be cut open, bent and twisted out of shape. In many cases they are utterly ruined, as far as fitting again is concerned, but are generally patched and used again. This is often made necessary by the fact that a sufficient fee cannot be commanded, except in few instances, which would justify the dentist in making new crown for the abutments, besides replacing the broken facing; he, therefore, does not feel called upon to do more than is absolutely necessary. If it becomes necessary to repeat this operation a second or third time, the condition of the crown may be easily imagined. They will be composed in most part of solder, and are rigid, unyielding and ill fitting, but still made to do service.

I am sure this very thing accounts for many of the poorly fitting, disreputable looking bridges we often see. We judge them in their present condition, forgetting that possibly they may have

got in such condition through a series of repairs. And then some bridges have a faculty of getting loose at one end only, then it becomes necessary to sacrifice the crown that has proven true.

Second. The so called self-cleaning space is a misnomer, a delusion, and a most convenient place for the lodgment of food. It is almost, if not impossible to keep them clean. It may be possible, but I have yet to see one kept so. I think a bridge with these spaces is not so cleanly as a saddle bridge, but it possesses this advantage—you can look under it and see what is there. In some cases these self-cleaning spaces interfere very seriously with speech and are a great annoyance to the tongue, while for all the vile odors imaginable I have never found the equal of a recently extracted fixed bridge.

Third. In many cases the teeth to be used as abutments diverge from the parallel, necessitating an undue amount of grinding or a stretching and straining of the piece until the fit of the bands is destroyed.

Fourth. The fixed bridge as usually constructed fails to restore the full contour of the lost tissues; this, of course, would not apply to saddle bridges, as the objections under the first three do.

That the fixed bridge does not fully meet the requirements is demonstrated by the continual striving for something better, in the various forms of removable pieces that are suggested and introduced from time to time, thus overcoming in most cases and in great part the objections to the immovable work.

The ideal bridge must belong to the removable class, as it alone can possess all the requisites necessarily inherent in an ideal bridge, and must conform to the following requirements: The lost tissues, teeth, gums and process must be exactly restored, it must not be too complicated of construction (which is a serious objection with some systems); must be easily removed and replaced by the wearer and yet must be perfectly rigid and immovable when in position; the teeth that are supplied should be attached to a small plate or saddle resting firmly on the gums, thus relieving the piers of any undue strain or pressure, they being used principally to hold the bridge in position. A bridge filling the above requirements can be easily repaired and can be kept clean, the two most essential requirements.

It is not intended to condemn fixed bridge work in toto, for I am sure that in many cases it would be indicated in preference to

removable work, in the present state of developments of the removable systems; but my desire is to call your attention to the limitations and possibilities of each system, so that with these well in mind we may at least form a correct opinion, as the cases are presented to us. It must be admitted that fixed or immovable bridge work has attained its highest perfection, and any further progress must of necessity be along the line of removable work.

Bridge work should only be inserted after thorough study of the case in hand, the conditions to be met should be fully appreciated, discrimination should be made between the fixed and removable systems, with the difficulties to be overcome and the mechanical principles involved well in mind; it is well also, in this connection, to keep in mind the fact that partial gold plates, made stable if necessary with clasps on gold crowns, are indicated in many cases instead of either form of bridge work.

There is probably less objection to fixed bridge work in the incisor region than in the molar and bicuspid, because the contour of the lost teeth is more nearly restored, it is possible to keep them cleaner, and facings can be more easily replaced while the piece is in the mouth.

In this connection a brief mention of some of the crowns and attachments used in removable work would probably not be amiss. Probably the best crown for the six anterior teeth is the Richmond removable crown with a split pin, by which the crown can be made tight again if it should become loose. If this crown is properly made, great care being given to the minute details, I am sure it will do all that is expected of it, being easily removed, yet perfectly rigid when in place. For the molars and bicuspids, the telescoping crowns are among the best forms. They must be accurately made, and the crown should be of some length, not too short.

One of the most admirable systems yet devised is described by Dr. Rhein in the *Cosmos* for February, 1894. This overcomes every objection that can be made to fixed bridge work. Mutilation of the teeth is reduced to the minimum, it being only necessary to shorten the articulating surfaces, split crowns being used if the sides are not parallel, the edges being drawn together after the crown is in place, which requires a high degree of skill, as do also the other numerous details of the system, to accomplish the desired result, together with an infinite amount of patience and time, and a good fee in view—a combination rarely met with.

Various forms of clasps are also used as a means of holding in position removable bridge work. These pieces border very closely on plate work, in fact, may be said to be the connecting link between the true bridge and the plate, but are probably of doubtful value.

I have also used the Condit attachments in several cases. In one, two bicuspids were supplied, being attached with rubber to a small gold plate or saddle, which rested on the bridge, crowns being placed on the cuspid and molar, with the Condit attachments soldered on; but I am awaiting developments before using them further.

While all these methods are useful and valuable in many cases, I cannot but believe that the future has in store something better—a system that will be easily constructed, durable, positive and universal.

Dentists in the Army.

By Geo. W. Griswold, D. D. S.

The subject is one that has been discussed at some length by the dental brethren, and I will not attempt any long-winded argument in regard to it; but from my recent experience in the volunteer forces of the United States I might possibly be able to give some information on the subject.

The soldier's life is one that requires a sound body, a sound mind, and a sound set of teeth, and the average soldier is, I believe, desirous of taking good care of his teeth, for he realizes their importance, when it comes to masticating Uncle Sam's hard-tack, salt pork, bacon, etc. But how is he going to take good care of them? On the salary he is getting he cannot afford "dentists' bills," and if he could, he is only allowed to leave camp or garrison at long intervals, and feels that his leave is too precious to be spent in a dentist's chair.

The result is that his teeth are neglected and decay progresses until some fine day when blissfully eating his rations a piece of hard-tack gets into a cavity, crushes through to the nerve, causing him to jump four feet in the air, and yelling like a Comanche Indian, rushes off to the regimental surgeon, who seats him on a camp stool, calmy surveys the offending member, gets two or three grinning hospital stewards to hold the victim, while he produces a pair of antiquated "archaic" weapons that some dealer in surgic

nstruments has palmed off on him as a universal forcep, grabs the ooth, and, placing his knee on the patient's chest to give him a urchase, gives a long, steady, straight pull that would not bring he tooth in a hundred years, and smash she goes. The result is hat the next time that particular man or his tentmates have tooth-che they prefer to stick it out rather than be butchered, and con-sequently are unfit for duty.

How much better it would be if every regiment had its dentist, a an who has been in continuous practice long enough to have assed the "smart aleck" stage. Such a man, with a capable ssistant, could by frequent inspections and a strict attention to usiness help wonderfully from a physical standpoint to improve he army and naval service of the United States.

PROCEEDINGS OF SOCIETIES.

Minnesota State Dental Association.—Fifteenth Annual Meeting.

A paper on "The Lymphatic System" was read by C. A. Erdmann, M. D., Minneapolis.

DISCUSSION.

Dr. Hartzell: One of the chief reasons I had for wishing to ear this paper was the fact that it deals with a system that is very, ery little known, and that it could explain to me, possibly, the anner of recovery of a very great many of the inflammations that ccur about the face. Every day that you go out on the street you ill meet people with swollen faces. The original cause is usually eglected teeth, and ordinarily that causes inflammation in and bout the face. All these inflammations are reduced, and how are hey reduced? They are reduced by the lymphatic system. It is ot by the blood vessels and veins that the products of the inflam-ation that are thrown out into the tissues are taken up, absorbed, nd removed, but by the lymphatic system. This system is not escribed in the books and is very little treated of by anatomists. t is the least understood of any system of the body—less than the ervous system, the venous or arterial system—and yet, as a matter f fact, it is scarcely second to them in importance in the conser-ation of health. Its action is well illustrated in a thousand ways. ou examine a pair of lungs, say of a coal heaver, examine the mphatics in that lung and you will find the tissues loaded with

black particles. What are they? They are the particles of coal dust that have been absorbed by the leucocytes; they have penetrated the epithelium and now absorbed by the leucocytes. In tuberculosis the lymphatics make an effort to protect the system from further inroads by the bacteria. The leucocytes circulating in the lymphatic system have the power of entering the tissues and absorbing the bacteria. Where it can do it the leucocyte travels along the lymphatic system until it comes to one of these sets of glands and lodges there, and the result is swollen cervical glands, and if the patient does not succumb to the disease it is certainly because these cervical glands prevent the disease running through the whole circulatory system. These glands are removed and the patient is rid of glandular tuberculosis. The lymphatic system is responsible for all this. If an abscess occurs in or about the face it is the lymphatic system that takes care of it. All the swellings in and about the mouth are reduced by the lymphatic system, and because it is so little understood generally, and because of the great interest it is to us in cases that come before us incidentally I deem it a great pleasure and profit to listen to this paper.

Geo. D. Head, M. D.: If you will pardon a word from a medical man I will take up a few moments in discussing this subject. I have been exceedingly interested in hearing Dr. Erdmann's paper again, although I heard some of it on another occasion; but many points I missed then, I have listened to with much interest now. I want to give an illustration of the importance of the lymphatic system, which the doctor has so emphasized, and which opened my eyes to the great importance of this circulatory system in our own bodies. I had occasion about a year ago to make a study in connection with a medical man upon the effects of hæmorrhage upon the leucocytes of the blood, and the procedure was to take a number of dogs, ten or twelve, and bleed them and note what effect would take place on account of this hæmorrhage upon the cellular elements of the blood. Counts were made previous to the hæmorrhage and counts were made immediately following the hæmorrhage, both of the red and white corpuscles. The interesting thing is this: That the dog was bled, say three hundred cubic centimeters of blood—as much as he could stand and live—there was an immediate reduction of the leucocytes of the blood consequent on this hæmorrhage. Why was there that reduction of the leucocytes? It seemed to me it could be explained only upon the ground that as soon as this volume of blood was drawn out of the vein

there immediately rushed in from the lymphatics an additional amount of fluid which was stored in the interstices of the lymphatics. It rushed into the vascular system to make up for the fluid or blood which had been drawn out. I also noticed that after such a hæmorrhage if as much blood was injected as had been taken from the dog, one would naturally expect that by the additional amount of water thrown into the veins the leucocytes, which are a fixed factor, being about six thousand to the cubic centimeter, there would be a still further fall of the leucocytes by the addition of water, but on the other hand it was found that the fluid probably never did get back to the vascular system, it went out of the veins back to the lymphatics and there was no further production of leucocytes, but the count remained the same. It opened to my eyes the fact of the great importance of the lymphatic system, and whether in case of hæmorrhage if there had not been a certain amount of circulating fluid medium the patient would die, but the lymphatic system, the moment this blood was drawn out, immediately came to the rescue and threw all this additional fluid into circulation.

Dr. ERDMANN: I am sure there is little more to be said on my part. If I have not bored the listeners with the length of my paper I shall feel that I have pleased you, and the remarks made on the paper by Drs. Head and Hartzell I think are all along the line of argument in the paper without taking them up and discussing them more. Much of the same nature the gentlemen spoke of might be taken up and studied with that end in view. It is found to assume an importance fully as great as the circulatory or the nervous systems.

I thank this society very much for having so patiently listened to and received my paper.

"A White Blood Count as a Means of Diagnosing Pyæmic Infection. Geo. Douglas Head, M. D., Minneapolis. (See page 27.)

DISCUSSION.

The CHAIRMAN: Gentlemen, you have heard this very interesting paper and it is now open for discussion. We would be glad to hear from any of you gentlemen.

Dr. HARTZELL: I believe we as dentists are very apt to drop into ruts; our talk proves that we are a strata of society for ourselves, and if we are not brought into contact occasionally with

some of the push of the onward march of science we are apt to limit our work entirely to repairing diseased teeth. It seems to me this is a very great error. I think we have got just as much interest in these improvements and this increased knowledge of various diseases, of diagnosis and anatomy, as medical men; and I for one have felt all this to some considerable extent, and I find the discoveries along this line are of just as great value to us as they are to the medical men, and I am very glad to have this opportunity of listening to a paper of this kind in a dental society. There can be no comment made on that paper, because the result of the examination made by means of the blood count has superseded the supposition of the clinician; there has been no failure in these fifteen or sixteen cases.

The CHAIRMAN: I wish to say that personally I am very much pleased with this paper. It comes to me like a revelation to think that science has advanced so far that we can determine whether a deep-seated abscess, speaking from a dental standpoint, contains pus or not. I have many times scratched my head in contemplation and wondered whether there was pus present or not. Dr. Head has told us this afternoon a positive method, judging from the record, whereby we can easily determine the presence or non-presence of pus, and personally I thank the Doctor for the paper, and I am sure we all do.

If there are no further remarks the chair will ask Dr. Head to close the discussion.

Dr. HEAD: Mr. Chairman, I thank the society for listening to this paper, which was written more from a medical standpoint than from a dental. The subject is not new to medical men, considerable work having been done upon it, probably most of it within the last five years; but I feel certain that before many years the vascometer (?) will be a common instrument among medical men, and I hope among dentists as well. It is a very successful appliance, especially where a man is somewhat in doubt. I can imagine there are many times in dentistry cases arising where it would be very necessary to know whether there has formed absolutely a pocket of pus, especially in the region of the antrum, which is being more and more turned over to the dentists, and this instrument would be valuable to determine when to operate or when not to operate.

On motion of Dr. DAVENPORT, a vote of thanks was tendered Drs. Head and Erdmann for their valuable papers.

WEDNESDAY AFTERNOON SESSION.

REPORT OF CLINICS.

Chair No. 2. Operator, Dr. C. M. Bailey. Reported by Dr. F. E. Twitchell. Disto-occlusal cavity in superior left first bicuspid.

The cavity contained an alloy filling which was first removed. The preparation of the cavity followed essentially the principles as laid down by Dr. Black, with the exception of the labial and lingual grooves. These grooves were used in the retention of the alloy filling, and were not removed by the operator.

The labial and the lingual walls were freely cut away so that the margin could be easily kept clean by the excursions of the food, the cervical margin extending well up under the gum. Comparing the width of tooth with width of seat it was found that the latter was two-thirds the width of the former.

The filling was commenced with three and one-fourth sheets of soft gold, followed by one-eighth sheet, after which the operator used one-sixteenth, consuming in all four sheets of gold.

In the finishing of the filling the interdental space was carefully preserved, also contact of filling with the adjoining tooth.

DISCUSSION.

Dr. TWITCHELL: I do not know that I have anything to offer n discussion. I think some one else is more capable of discussing his clinic than I am. I simply submitted the report and did not expect to discuss it. I think I would call on the operator.

Dr. BAILEY: I have nothing to say, Mr. Chairman. I think most of those present saw it, and if any one wishes to ask any questions I will try to answer. It was an ordinary clinic in the disto-occlusal cavity.

Dr. CRUTTENDEN: Are you willing that the filling should speak for itself?

Dr. BAILEY: I am perfectly willing the filling should stand for itself. I will make one explanation, however, Mr. Chairman, to those who saw the operation. There were one or two who spoke about the grooves on the lateral walls of the cavity, and I will simply say those grooves were there before.

Chair No. 6. Operator, Dr. Geo. Monson. Reported by Dr. L. C. Beise.

Operation. Upper left first molar disto-linguo-occlusal cavity, with seat and step.

On account of extensive decay on lingual surface, it was impossible to make an ideal preparation. Chisels were used mostly in making preparation.

The filling was made of Rowan's cohesive foil gold rolled into pellets, halves and eighths, and condensed with straight pluggers and hand mallet.

Cervical margins trimmed with trimmers similar to those of Dr. Black, and separation made with lever saw, finishing with a series of corundum stones and polished with wood points and pumice.

DISCUSSION:

Dr. BAILEY: *Mr. Chairman:* I will start the ball rolling. I want to say that the clinic of Dr. Monson's is the finest of a foil filling I ever saw at any public clinic in my life. It is the most difficult cavity I ever saw operated on at a public clinic. The disto-lingual corner was completely gone when I saw the operation this morning. The distal wall, while it touched the other teeth, the second molar was intact, so of course, the decay had extended back; then in cutting it out it was necessary that the whole had to be cut down so that the margin on the buccal surface of the disto-buccal angle was completely cleared, so it was cut round to keep it perfectly clean. The filling was made entirely with cohesive gold, but he had to anchor to pits and corners. I did not see the clinic made, but I know what he must have done. I think he used pits to some extent, and so filled with cohesive foil from start to finish, and as he had not commenced the operation on the cavity before he got here I think I can safely make the commendation I did when I got up. I have seen just as good work, but it was the most difficult cavity to undertake at a public clinic.

Chair No. 8. Operator, Dr. F. B. Kremer. Reported by Dr. E. H. Haas.

Operation. Disto-occlusal cavity, superior right first bicuspid. Cavity prepared after the teaching of Dr. G. V. Black.

The filling was started with two half and one one-quarter sheet cylinders of noncohesive gold, the remaining portion of the cavity being filled with cohesive gold in the form of pellets rolled from foil.

The noticeable feature of the operation was the filling of the cavity without the use of a matrix and the use of a saw for the removal of surplus gold, and the establishment of the interproximate space after the condensation with back action pluggers. The

filling was dressed down with knife edge trimmers and files, only *two* polishing strips and *two* disks being used.

The time consumed in this most excellent operation was only one hour and thirty minutes. The malleting was done with an eight ounce lead mallet, leather faced, gold being passed in place by means of St. John's gold carrier.

One feature of the operation meriting special mention was the help derived from a well trained assistant.

Chair No. 9. Operator, Dr. T. E. Weeks. Reported by Dr. Alfred Owre.

Operation. Right superior second bicuspid tooth. Cavity simple disto-approximal, converted into occluso-distal.

Entered disto-occlusal sulci with square fissure drill pointed by grinding it wedge-shaped. Occluso-distal enamel was then removed or broken down with a chisel.

Buccal and lingual enamel was removed with chisel. But enamel drill was used to remove overhanging enamel in and around sulci. Black's right and left distal and mesial cervical trimmers used. Main cavity wide, considerably more than two-thirds width of tooth. Step not very deep; barely through the enamel. Step cut with inverted cone. German silver matrix and Hewett's matrix holder used. Noncohesive gold at floor of main cavity, balance filled with Rowan's cohesive cylinders.

A beautiful operation.

DISCUSSION.

Dr. Reid: *Mr. President:* I want to say in a general way that I have seen the finished results, I think, of all the operations but two that were made here. I want to say right here that I have been attending State meetings and national meetings and meetings of various local societies for the last thirty years, and I do not believe I have seen in that length of time a more valuable class of clinics than each and every one that we had here to-day. (Applause.)

I wish to endorse what Dr. Bailey has said in regard to the difficult case Dr. Monson had, and in looking at the results of the work of Dr. Kremer and Dr. Weeks, I say we need nothing to make a society in this State a success but the work and energy of our own members. This idea of sending away for foreign talent and paying a high price for it for something we can show ourselves

I look upon as a humbug. I think we have just as good talent and can bring out as good results as anybody else, I do not care where they may be from. As I said before, I think the clinics we had this morning were the most valuable I have seen in thirty years. I cannot single out any one as the best, but they were good as a whole, and no operator need be ashamed of his work or afraid to have any one examine it in Minnesota or any State in the Union. (Applause.)

Dr. WEEKS: I would just like to call attention to a fact mentioned in the report. My attempt was to make this operation just as I would make it every day in demonstrating it in my classes, using nothing but what is used in the college of dentistry; no instrument used except what is furnished every student in making operations. I thought this might be of interest to those sending students to college to operate in that way.

The CHAIRMAN: Is the report correct in regard to cutting?

Dr. WEEKS: It was cut with an inverted cone.

Chair No. 1. Operator, Dr. I. C. St. John. Reported by Dr. M. O. Nelson. Right central, mesial cavity, involving the labial and lingual surfaces.

The feature of the preparation was the retention in the incisal angle. Instead of making the usual retaining pit Dr. St. John conserved the dentine to support the enamel on the angle. This was done by grooving the labial enamel external to the dentine, and also a straight pit or groove in the dentine near the lingual surface, these two retaining grooves having a ridge of dentine between them.

The second filling was a mesio-occlusal cavity in the left central incisor. It was prepared according to Dr. St. John's No. 1 preparation, with which you are all familiar. It was an unusually large filling, and it was necessary to cut away labially and lingually.

DISCUSSION.

Dr. ST. JOHN: In order to avoid the weakening of the labial angle instead of cutting the groove that is ordinarily cut to retain that portion of the filling, cutting it as extensively as it is usually done, I only made a slight groove. (This is the right central I am talking of now.) The groove was principally toward the labial surface of the lingual plate, and that portion on the incisal end of the filling near the right angle was brought over on the labial sur-

face and a groove cut into the enamel extending to the dentine. While the complete operation will show hardly an angle, but a straight line underneath the surface, the groove runs in the enamel, and the enamel has a long groove so as to help retain it, and also to take care of the stress that might possibly come on that portion of the filling. The filling, instead of being supported by the dentine, was so placed that it assisted in supporting the enamel at the angle of occlusion.

The CHAIRMAN: Before you sit down will you kindly answer those questions I asked you during the clinic?

Dr. ST. JOHN: I will if I can. What were they?

The CHAIRMAN: I have forgotten them. You filled two cavities, did you not?

Dr. ST. JOHN: The other cavity was a superior left central and occlusal cavity. The retention of the incisal portion of the filling was principally on the labial surface. I used what I term my "No. 1 preparation," with which you are familiar more or less.

Chair. No. 7. Operator, Dr. W. N. Murray. Reported by Dr. Sanderson. Patient, Henry Hartzell, of the "Iowa." Operation. 15 M & O.

No exposure. Cavity nearly prepared before dam was applied. Dam was applied with clamp and ligatures. Sterilized by carbolic acid. Retention, dovetail and auxiliary. Soft gold rolled to pellets slightly annealed for first part of cavity. Finished with cohesive gold in folds. No matrix. Margins of cavity carried well out, trued by disks. Hand mallet and straight points. Finished with disks and stones.

DISCUSSION.

Dr. MURRAY: I would like to have the other gentlemen make the remarks and criticisms. I think I make mistakes and have my shortcomings as well as other people.

I will say in speaking of cauterizing with carbolic acid, it was very near the nerve and I left a little decay in the bottom of the cavity. The nerve would probably not have been exposed if I had removed all the decay, but nearly so, and I thought it safer to leave a part of the decay.

The CHAIRMAN: Did you permit the carbolic acid to touch the enamel freely?

Dr. MURRAY: Yes, sir; I touched the interior of the cavity with carbolic acid.

Chair No. 4. Operator, T. B. Hartzell. Reported by Dr. Mary V. Hartzell. Patient, James Wells. Operation 1, disto-occlusal.

The peculiarity of this operation was in the preparation of the cavity, the base being pyramidal, there being no grooves and the retention of the occlusal third depending on an auxiliary dovetail in the cutting edge of the tooth.

Nelms' gold was used. The first pieces were not annealed; the larger part was annealed. The force used was a hand mallet.

DISCUSSION:

The CHAIRMAN: Are there any remarks on this clinic? There is one peculiarity about the operation, there were no pits. The operations of both Dr. Hartzell and Dr. Weeks were practically devoid of pits.

Dr. GOODRICH: It struck me in looking over these operations this morning that I have never before seen operations in which each operation might have been done by the same operator. There was great similarity in the preparation of the cavities and finishing the filling. That was one peculiarity of the morning's work.

Chair No 10. Operator, Dr. F. E. Moody. Reported by Dr. E. H. Haas.

The operation was a quick method of making an artistic solid gold dummy.

Select plate tooth suitable for case, grinding slightly if necessary for perfect occlusion. Then take impression of buccal surface of tooth with Melotte's compound; run metal in ring. This gives metal die of buccal surface. Then make die of occlusal surface in same manner. Strike up gold plate 22 k., 28 to 30 gauge from this die for separate parts which will fit accurately on model. Burnish tightly to place over model, placing a little hard wax over joint to hold parts in place. Remove plate tooth, filling inside shell with wax to hold in position. Remove outside wax, invert and solder with 20 k. solder. Then fill shell with 18 or 20 k. solder and finish to suit the bridge. This dummy is recommended to be placed upon bridges where the bite is short.

Dr. CASE, Chicago: I was at the different clinics this morning, and while I did not give that attention to all of the various clinics that I might have done, I must say that I am quite in accord with my friend, Dr. Reid, for you have in this society a class of men who are certainly skilled in performing operations of that kind

nd I judge from the work done in the society that all their operaions are done in the most perfect and most modern manner. I annot see, myself, in a society of this kind, where there is so much bility, where there is so much skill, I cannot see for the life of me vhy you need to go out after talent from other places. Talent, too, hat may not be quite the equal of that which you may be able to urnish among yourselves. I certainly was very much delighted vith the operations I saw this morning, and I am surprised to hink that you have not more men here to witness them. It reflects great deal of credit upon your society to furnish all these clinics nd bringing in this large number of men who are willing to perorm these operations.

Dr. LARRABEE: There is one thing that struck me forcibly in hese clinics and report of clinics, and that is that they all used vhat is called the "Black" method; that is being followed by all he operators. I want to ask is that the generally accepted method f operation, or are there others? If there are others why are we ot furnished with them by those who can give clinics under other perations? I was up here last spring to the post-graduate school, s it was called, and I enjoyed it very much; I received a great eal of instruction, but it was all along this line. Now I would like o know in teaching this method and following it exclusively are e giving professional men the opportunity to follow that which is est? If Dr. Black's method is the best let us have it. If there re others just as good let us have others. The operations were recisely the same as last spring, and I have not learned much since have been here. I am not criticising the society or the clinics, I m merely asking this for information. If Dr. Black's method is enerally accepted throughout the United States, of course, we do ot want to get into other ways; we want to confine ourselves just o that and become proficient. It seems to me this method has een followed so long that every man has done perfect work. The nly question I would ask is whether the Black method is the best nd the only method.

Dr. T. E. WEEKS: I would like to answer the last gentleman, nd I think I can. What has been shown here to-day demonstrates iat all the various operations in dentistry are becoming harmoized in purpose. We are adopting and discovering principles, niform principles, and the operations by so large a number of men so nearly the same way simply demonstrates the fact that we have,

so far as these operations are concerned, arrived at a uniform system; and I think Dr. Black does not claim this particular method of cavity preparation. If he makes any claim or his friends make any claim, I think he has systematized cavity preparation, and his work has given a new impetus to the profession of dentistry. That is Dr. Black's great work, systematizing and calling attention to principles and establishing our profession on a firm foundation. Now I think that answers the gentleman fully. He cannot find any other method of preparation among professional dentists, in the West at least.

Dr. St. John: I think the credit for the cavity preparations of molars and bicuspids is due to Dr. Black. In 1891 he published a series of articles in the *Cosmos* covering the ground fully, and a number of the operations were done this morning. They were done in just one-half the time the same operators could have done the work two years ago, before they learned how to do it. They were not mesial cavities, they were all distal cavities. I think one gentleman only took one hour to fill a tremendously large cavity, and to Dr. Black is due the credit of their being able to come here and do that practical work this morning, and I think the "Black" method, so-called, up to the present day is the method for that class of cavities, of bicuspid and molar.

Dr. Larrabee: How about incisors?

Dr. St. John: Dr. Black has not been working on that class of cavities.

Dr. Leonard: I have very little to say, but I realize that this is a subject of such great importance that it seems to me a full and free discussion would be of value. It is true this is a new era, practically, in the line of these operations, operating on bicuspids and molars. We have in the past been very much discouraged inasmuch as our fillings have been failures, largely from the sliding of our fillings out of the cavity. Not only Dr. Black, but Dr. Williams has given us pretty good evidence that we must cut laterally the walls of our cavities freely if we wish to make a permanent filling. If we wish the filling to sit squarely and firmly it is prima facie evidence in itself that we must have a flat or at least not a sliding base for our filling to rest upon.

Now as far as the cutting of the step is concerned in the bicuspid and molar, experience has demonstrated that where the main cavity joins the step is the weakest point. I have made ex-

eriments along that line, and the reason is very clear indeed. In ne case of amalgam filling I put in a Howe post, keeping the step ithin the main cavity. The filling stood one hour at 261 points, hile the same kind of cavity, of very nearly the same dimensions ll through, crushed at 250 in one minute without the Howe post, nd they all got away where the main cavity joins the step.

There is another feature which I have been working upon to nd some approximation with the cavity which we might term pical, and I measured quite a number of cavities to-day and they veraged a little more than two-thirds the width of the tooth; r. Monson's was considerably more, but take Doctors Bailey, Veeks and Kremer, they were very close to two-thirds the width f the tooth. Some of the doctors did not measure them at all nd do not know the relative sized anchorage, but upon measuring iem I found that was the size of the cavity. I think measure- ients along that line is a good idea. We will take more interest n our operations, we will watch our operations more closely, and e will be able to understand better which is the best method of utting our cavities and the suitable seating of them, and also the rm anchorage in the incisal surface which Dr. Larrabee spoke bout.

Dr. LARRABEE: One thing more I would like to ask. I see n that chart on the wall two kinds of preparations. One is the ght and the other the left central incisor. I would like to ask hich is the ideal preparation. This is an intelligent audience. ou will notice two kinds of preparations.

Dr. T. E. WEEKS: These charts are teaching charts, and they nnot be considered in any way as typical cavity preparations. ne one below in the lower right hand corner depends entirely on the anchorage within the cavity, and it is made to show that ere is about as much anchorage as could reasonably be expected the average tooth and it is about one-third as much as there filling beyond. It is made to demonstrate the kind of angle that n hold the filling.

Secretary CRUTTENDEN then read the following paper written by r. Geo. Griswold, late Captain 12th Minn. Vol. Infantry. "Den- sts in the Army." (See page 194.)

DISCUSSION.

Dr. T. E. WEEKS: There was some action taken along that ne by the national association. It has charge of this matter of

the appointment of dental surgeons in the army and navy, and I have no doubt if this society appoints a committee it would be a move in the right direction, and in the interim if the national committee wanted anything from this society there would be a committee to coöperate with them from this State. Undoubtedly we might have some influence with our representatives and senators at Washington.

The CHAIRMAN: The national society appointed a committee of three for the purpose of pushing further legislation and make an effort to draft a law.

Dr. MURRAY: I do not know that I can say anything of interest on this subject, yet it is one which I would think the army and navy officials ought to take into consideration. Of course, we have men in the society who have gone to some of the posts in the West and have attended to the dental needs of the soldiers and officers at those posts. It seems to me dentistry has arrived at the stage where the best welfare of the soldier demands its practice in the army and navy. I think not only the American association, as Dr. Weeks reported, but the Inter-State association also, appointed committee to investigate and try to get legislation on this matter. I think the profession of dentistry is at that stage where I am sure if the matter were brought to the attention of the proper officials they would recognize the need of this step.

On motion of Dr. Weeks, a committee of three was appointed to coöperate with the national committee for the furtherance of the bill pertaining to dental legislation in the army and navy.

The CHAIRMAN: I have taken the trouble to correspond with quite a number of army officers. I have their letters here, and it has occurred to me it would be well to introduce them to the society in the form of resolutions. I have them with me, and if it is the pleasure of the society I will read them so they will become part of the transactions. They will be published in the journals, and in this way will create a sentiment among the profession generally.

Dr. LYON: There is only one point I want to bring out, and that is that this movement was designed for the benefit of the common soldier. The officers can go at it as they please, they can afford it, but it is for the common soldier, the rank and file, that are the men this measure is designed to reach. Dr. Weeks was speaking a moment ago of those who went to the front and worked

or the officers; if they worked for the men, for the privates, the officers would have no more work for them. It is for the rank and file that this movement was started.

Dr. LEONARD: In these communications I have received, the relief is not only designed for the privates, but also for the officers. I have letters from officers who were in Camp Chickamauga and lost a great deal of time and suffered much on account of not having dentists in camp. The time is coming when members of our society should be in demand where there are no dentists neither for the privates nor the officers. There is no question but what they are losing teeth, and they lose valuable teeth. Now I do not think we always look at this matter in the right way. Our mission is to save teeth, not in St. Paul, not in Minneapolis, not in Minnesota, but to save teeth the civilized world over; that is what we are trying to do, and I think we should do all we possibly can, as a profession, to save the teeth which are being lost and which will be lost in the army and navy. There was a bill introduced in the house of representatives last spring which met the fate of many others. The senate and congress need to realize that this is a necessity; and it seems to me what we need to do is to procure evidence in the way of getting letters from men who have had practical experience, as Dr. Griswold speaks of, men whose testimony is worth something, and place them before congress. Let every man in the United States who is cognizant of these needs place the matter before his senator and representative. That is the reason why I think it would be well for the society to receive these letters and make them a part of the proceedings.

On motion of Dr. Larrabee, the secretary was instructed to turn the letters over to the executive committee for publication in the proceedings if they deem fit to do so.

THURSDAY AFTERNOON SESSION.

Report of Clinic by Dr. Schwartz, Chicago.

I will just give the report of the clinic in a general way. It was the left superior second biscupid. It was a porcelain crown of a high color. You cannot restore the interproximal space at point of contact and make an artistic piece of work, one that resembles the natural crown as near as possible. That is the only report I have. I use a porcelain faced crown and American tooth. The lingual and occlusal portions of the tooth were grooved. With one lingual band and the bands of the tooth I soldered to the post in the band that went into the lingual root.

The Odontographic Society of Chicago.

A regular meeting was held in the Stewart Building, November 14, 1898, the President, Dr. George W. Schwartz, in the chair.

Dr. A. C. Hart, of San Francisco, Cal., read a paper entitled "Evolution of Decay."*

The discussion was opened by Dr. G. V. Black, who said: The paper presented this evening is interesting in many ways. It is interesting because of the enthusiasm of the man who has presented it; it is interesting because presented by a young man well prepared by education and training for scientific work, who has apparently a long life before him in which to pursue his chosen lines of study. It is interesting because the views presented are so unique, and, apparently, original. But more than all to me it is interesting because it calls attention strongly to the conditions which bring about immunity from caries of the teeth—a subject which I regard as of first importance, and one of which, as yet, there has been no well directed study.

Some of the views expressed in the paper are so at variance with the general thought of the profession as to meet criticism, and perhaps sharp opposition. Some of these I may mention, not in the combative way, but rather as an effort at directing the discussion of them.

Decay is presented and discussed as a force acting upon matter, or through matter, changing compounds from the more to the less perfect forms, and is compared to the life force, the force of gravitation and the other forces which we know in nature; while microörganisms are recognized as the active agents in decay of the teeth, no real distinction seems to be made as to the character or the quality of disintegration by this force, decay, but the decay of the man by reason of age, or of worlds by eons of time seems to be reckoned as occurring through the exercise of the same force decay, as decay of the teeth, or inferentially decay of fruits, dead bodies, etc. This consideration of decay, while original and in many ways forceful, does not appear to me as an advance upon former considerations of it. The man grows old from the exhaustion of the potential energy of the life force as represented in that individual, so that the physiological functions are less and less perfectly performed, until finally the man dies. Calling this decay of

*As this paper had already been published in California and in the daily papers in Chicago, we cannot republish it.—Editor.

ıe man I have always regarded as a purely figurative expression. 'he man does not die while living. He takes in material and ırows out material once a part of his physical tissues, but the act f excretion is just as truly an act of the life force as the act of bsorption or the secretion of saliva or of gastric juice. Man's ssues decay only after he is dead, or locally because of disease hich causes local death.

Chemical disintegration is not decay, necessarily. The deli- uescence of a salt when exposed to the air may be a disintegration f the crystalline forms, or chemical changes may be coincident ith hydration. We can analyze and understand the chemical ɔrces acting here. The rock exposed to the elements may be roken down and washed away by frost and rain; disintegration ccurs and new chemical compounds may result. Shall we call his decay? We can understand and analyze specifically and eparately the factors of force acting to produce this disintegration. Then is it a simple force in nature, as gravitation? Take the pple; when we have examined a few we are sure to find one with decayed spot. We cut this through and find within the tissues f the apple the distinct outlines of the decayed area. Now is this simple force of nature acting thus locally upon the fruit? Why oes not the whole apple decay contemporaneously if the decay is rought about by a simple force in nature? Have we not here omething different from this simple force in nature bringing about ıe disintegration of the fruit? I suspect we have some force cting upon this fruit locally and when carefully studied in the ght of the science of to-day we find that force to be life force presented in microörganisms. We may cultivate them and lant them in other apples and see that they produce the same ɔcal disintegration. We may analyze their physiological acts of gestion, absorption, formation of waste products, multiplication, nd find just how they act to produce disintegration of the fruit. ı other words, the fruit does not decay, something decays the uit. Shall we regard this decay as a force in nature possessing ıch qualities as the force of gravitation and say that it is common ı these manifold forms of retrograde metamorphoses?

Decay of the teeth is allied closely to decay of the apple. It, o, is caused by organisms acting upon the tissue from without, t, not by the same act of digestion primarily, but by the produc- ɔn of an acid that dissolves the lime salts of the tooth. A purely

chemical disintegration primarily, followed by digestion of decalcified areas only after the microbes have entered the tissues. Here again we have, apparently, not a distinct force in nature decay—but decay is distinctly produced by the interference of another form of the life force.

The contention that microörganisms act to produce disease by the absorption of the water of the tissues, is another of the novel features of the paper. Certainly microörganisms cannot grow without water. No life can manifest its activities without water. Water is necessary to every function of animal and vegetable life. But do microörganisms produce disease by depriving the tissues in which they grow of water? Take tetanus, for example. This has been closely studied and it has been found that the microorganism of tetanus produces a toxine which when administered separate from the organisms acts as a poison, producing muscular spasm. Does this poison act by robbing the tissues of water? In typhoid fever, which has been cited, we have an organism growing which produces a toxine which when administered separate from the organism produces a temporary fever, apparently through its action upon the heat controlling centers of the nervous system. Does this fever result from robbing the tissues of water?

I do not know why opium should act upon the nervous system to produce insensibility to pain. I do not know why chloroform should produce unconsciousness. I may not be able to explain the poisonous action of arsenic. Neither can I explain the action of tetanine or the toxine of the typhoid bacillus. Hundreds of things in nature we observe simply as facts and record them. We may speculate about them, we may even accumulate facts regarding the action of poisons, learn the tissues they act upon or through which they act, and some others we may find to act chemically, and explain satisfactorily; but with many of the vegetable poisons we only know the leading facts of poisonous effects. Are these any less facts on this account, and do we need to make the effort to further explain why microörganisms produce disease after finding out the poisonous action of their products?

I come now to speak of the most interesting proposition in the paper, that of producing immunity from decay of the teeth. In discussing this I wish to call attention strongly to the fact that very many persons in each community are immune from caries of the teeth for the greater part of their lives. If I have read clinical

ridences aright this is a substantial fact, and one that has never ad due consideration by the dental profession. Often we have arefully treated a patient's teeth, filled all cavities, and afterward here is no recurrence of decay after years of observation; we pride urselves upon our success, when, if the facts were known to us, he patient had become immune from caries, and all we did was repair damage. We did not arrest the caries; it was arrested forces entirely beyond our knowledge and control. With the ception of two short periods of my life I have been immune from aries of the teeth. All of the other members of my father's family ffered greatly from caries. I wish I knew why this difference. hese facts must be considered in any study of efforts to produce mmunity artificially, or else we will be apt to consider that we ave produced immunity when really the immunity has come bout from other causes. It will, therefore, require a multitude cases observed by different men to establish the reliability of rtificial immunity.

Decay of the teeth, like decay of the apple, is not from any ondition inherent in the teeth; the teeth do not decay, in fact, it something decays the teeth. We know quite accurately what is something is and how it acts. What we do not accurately now are the conditions of this action. The question is, why does not act similarly in all persons in a given community? Why e some immune while some are exceedingly susceptible? This estion is awaiting an answer. And now while we are awaiting d wishing this answer, Dr. Hart comes and proposes to produce is immunity artificially without awaiting this wished-for answer. his is indeed a startling proposition. How he does this he has id you in the paper. The process is too simple to need repeti- n. It is within the range of the ability of most of us to give it thorough trial, and that without much difficulty, and this is the st way to discuss it. Startling as this proposition is, it is not solutely new, except in the wider sense in which it is expressed Dr. Hart. Many years ago—twenty-five or thirty, I think—the oposition was made to treat caries of the teeth of children with ver nitrate instead of filling. This has seemed to have sufficient rit to keep the idea alive, and if we had time to look up the erature quite a number of articles would be found advocating is method, and claiming a high degree of success. I have used myself in a good many cases, often with decided benefit, but not

always successfully, occasionally disastrously by exciting an uncontrollable pulpitis. But I have not used it with great faith, nor with the care and persistent watchfulness that may be a necessity to fully test its merits. Experimental work of this nature must be very thorough to reflect the full truth.

In discussing this from the theoretic standpoint I should remind you that the microbes of caries do not attack the teeth primarily by digestion of the substance of the tooth, but by producing an acid that acts upon the teeth. Hence, it would seem that to prevent this action the teeth would have to be made to resist the action of the acid. It seems to be a fact, however, that in order that this acid may be made to act, the microörganisms must grow in actual contact with the teeth and be also covered in with gelatinous plaques to prevent the dissipation of the acid in the currents of the saliva. Now the question is, is it possible by the use of antiseptics to place the surfaces of the teeth in such a condition permanently that the microörganisms of caries will not grow in contact with them. This can only be determined by persistent trial by a number of skillful men.

Dr. W. J. YOUNGER: I want to ask Dr. Hart whether in his investigations he found the cause of decay suggested by Professor Miller, namely, the leptothrix buccalis, or some other cocci; and if so, whether he thinks these cocci are the cause of decay in teeth. It seems to me, he has gained a point ahead of Professor Miller in saying that he has found these cocci in enamel. I had always supposed that the enamel was impervious to bacteria.

Dr. GEORGE W. COOK: I was interested in the paper. There are a great many things that I do not know that Dr. Hart does know probably, and among them, how bacteria get into the enamel. The question of water was one that interested me not a little, and I was much surprised that it was necessary for it to be present in order that the bacteria might develop, and that the bacteria took the water out of the tissues by a process of disintegration.

There is one other point I would like to refer to, and that is the staining of bacteria by tobacco. I would like to ask Dr. Hart how he knew the bacteria were stained by tobacco, and by what means he determined that point.

Dr. HART: In answer to Dr. Cook, I will say that if he will scrape off the stain and submit it to an analytical chemist, he will be told what the reaction is.

Dr. Cook: There was another question brought up, and that s with reference to Dr. Miller not having found bacteria in dentine. I have always been under the impression that Dr. Miller was eally the first man who made any study of the bacteria in dentine. believe his first paper on the subject was published in 1882 or hereabouts, and if I am wrong, I wish to be corrected.

Dr. Hart brought out a point relative to the field mouse being nade susceptible to anthrax, and that it was by extracting the vater from the tissues of the mouse that this process took place. would like to have him, in his closing remarks, explain that point, f I rightly understood him.

Dr. F. B. Noyes: I have been much interested in the work f Dr. Hart, and am very happy, indeed, to have made his acquaintnce. I have enjoyed exceedingly the work we have done together, he more so perhaps because this subject of immunity has been ne to which I have given considerable thought for several years; ny ideas, however, have never been subjected to the test of experments, and Dr. Hart has been able to carry out experiments upon his line, following out the idea of the production of immunity.)r. Hart and I do not agree at all in a great many things, and we gree most heartily about other things. Our interpretations of ertain points very often are at the widest variance. As I have hought upon the subject of immunity it has come to me in the ight and from the side of the individual; that is, I have thought f the *individual* as immune from caries, not the teeth immune from aries. When a person becomes immune from smallpox, the indidual, not any special tissue of his body, is immune from the disase. Dr. Hart has taken up immunity from the other side, studyg and seeking to produce a condition in this particular tissue hich will render it not liable to destruction, which will prevent e agencies which act upon the tissue from affecting it. My ideas f immunity have been entirely from the line of producing such a rrounding for the tissue, such an environment that the microrganisms cannot produce the essential elements required for the estruction of the teeth. In the condition described by Dr. Hart e surroundings or the environment of the microörganisms may perfect; they may be so environed as to form substances which ould attack the teeth, if the teeth were not rendered in such a ondition as not to be attacked; in other words, Dr. Hart has garded the tooth substance as food for the microörganisms. My

ideas have been that the microörganisms depended for their nourishment on substances outside of the teeth; that their environment has no reference to the teeth, and that the destruction of the teeth is not an eating up of the teeth, so to speak, but a corroding of them by the waste or incidental products of cell growth. In the same way we have the fermentation of substances, the conversion of one substance into another by the action of microörganisms. That a substance should be so transformed is not essential for the life of the microörganisms, but their life incidentally performs that function. So I have regarded caries of the teeth as an incident of the growth of microörganisms, under certain not understood conditions; not an active eating up of the tissue by microorganisms. In spite of our differences of interpretation, the fact remains that if the tissues of the teeth attacked by caries, and partially disintegrated, be so treated or chemically changed that microörganisms cannot grow in contact with them, we have produced a form of immunity. The establishment of these facts will be of the greatest importance to us as dentists. That that immunity will be permanent Dr. Hart does not claim. If it proves to be true from these experiments there will still be the great problem of immunity to be solved; the immunity from the other line will still be unsolved, and the elements which control the environment of the microörganisms in the fluids of the mouth, so that under some environments the microörganisms grow and produce these plaques which remain attached to the teeth, confining the products of growth so that the tissue is attacked, and in other cases they grow equally well without the formation of plaques, and consequently with no destruction of tooth tissue. The elements, therefore, which control the environments still remain to be solved; there is still a work to be carried on. (Here Dr. Noyes projected on the screen some pictures illustrating the production of decay upon the surface of the enamel, and showing that the enamel is attacked by microörganisms from its surface.)

The value of Dr. Hart's work I appreciate most highly, and cannot say enough to lead us as individuals to put this question to the test of experiment, to try it and use it.

Dr. Truman W. Brophy: I have not anything to say except this, that any one who is able to devise some plan of medication or adopt any process to prevent teeth from decaying, will confer the greatest possible blessing upon the human family, because

caries of the teeth is one of the most prevalent of the diseases known to mankind. I wish to express my appreciation of the effort that has been made by Dr. Hart, and to wish him the highest degree of success in the furtherance of his work in this department of dentistry. Dr. Hart is an enthusiast, as we have seen. His experiments and expressions have carried with them that conviction.

I wish to say, in closing, that reference was made to the use of alkaloids in medication, all of which was true so far as it went; in medication, however, we often wish to use agents that are not quickly absorbed, particularly such agents as act upon the alimentary canal without absorption. I hope the doctor will modify his statement in regard to that point, or amplify it so as not to be misunderstood.

Dr. E. S. TALBOT: I do not know when I have enjoyed an evening so much, because something new has been presented for consideration. A few things, however, occurred to me while the essayist was making his remarks that I would like to call attention to. There is an unwritten law in medicine that to know the cause is half the treatment. Although Miller, Black, Williams, Allen and Andrews have been studying the decay of the teeth for a great many years, they have not been able at the present time to advance a single idea that would help us in the treatment of the decay of teeth. I made the remark twenty years ago that our present methods of filling teeth were of very little account. What I mean is, that in a general way our present methods of treatment are unsatisfactory. We can stop decay to a certain extent, but yet it will go on continually. If you will visit the museums in Europe and examine the skulls of the ancients, you will see that while decay of the teeth takes place, it does so in certain fixed areas. Very rarely decay of the teeth is found upon the proximal buccal and lingual surfaces, but invariably in the sulci. I think the essayist will confirm my statement. Such teeth are frequently seen in the cliff dwellers of Mexico and the older Chinese. It shows that there must be defects in the structure of the enamel of the teeth, in order that the bacteria may collect at certain fixed points. The old theory that held good in such cases as this will hold good to-day, and this brings up a point to which I wish to call particular attention: That we, as dentists, have lost sight of one great fact not only in the decay of the teeth, but in irregularities—

that the jaw is growing smaller; they are transitory structures, and are formed imperfectly. The teeth are not growing smaller but one tooth is being lost. Take the third molar as illustration. It is never what is called normal, by an examination of the first and second molars; it is always imperfect. These structures, therefore, are imperfect; they are not as strong as they were even 1,000 years ago. This is due to the transitory condition of the human jaw. There is a change in the shape of the face and in the number of the teeth, which are fitting themselves to the environment for the conditions of life. The interlobular spaces, noticed under the microscope inside of the dentine and in between the enamel rods, are defective structures which form early in fœtal life. This great law must be taken into consideration—that the physical resistance of these structures is quite a factor. It has not been done in the past, and we have been narrow in our views; we have been racing along, preparing cavities and filling them without going into the general subject as we should.

We are very fortunate this evening in having heard some facts in regard to chemistry in its relation to dentistry, whereby the essayist has been able to concentrate and to fix the laws of nature in their relation to decay of the teeth.

The views expressed in the paper are not only in harmony with the laws of chemistry, but the treatment is based upon the latest theories of bacteriological researches. The methods employed are quite original and, of course, the results are a matter of demonstration. I have not given particular attention to this method of treatment except in a general way. I require my patients to use large quantities of borolyptol. It has been shown by a large number of bacteriologists that this preparation is one of the best antiseptics. I have noticed that not only are the mouths of those patients who follow my instructions in a more cleanly condition but that the teeth seem to decay less rapidly, showing to my mind the correctness of the theory advanced by the essayist. I had not, however, looked upon the matter in the manner the essayist has presented it to us this evening, who has brought another matter to our attention. Those who have made a study of the decay of the teeth have told us that bacteria burrow between the enamel rods and in the tubuli, while the essayist tells us exactly the opposite. I am very glad to be able to advocate this, for in preparing specimens of the jaws and teeth for the microscope

have noticed that bacteria and the acids produced live and act upon the lime in the teeth, rather than the organic matter.

I want to reiterate what I have said repeatedly, and what I would like to teach to these young men: That if we expect to make more than dentists of ourselves, we have got to get out of a rut and take a broader view of the subject of life. This is the only way we shall ever be able to make any progress in our profession.

Dr. HART (closing the discussion): In answer to Dr. Younger, it is generally conceded that the leptothrix buccalis plays an unimportant part in decay of the teeth.

Dr. YOUNGER: I believe Professor Miller found eight different pathogenic microbes in his investigations of the teeth, and with the exception of one or two, they were all bacilli.

Dr. HART: In explanation of what little work I have done in bacteriology, I will say that I have found a small bacillus resembling the typhoid bacillus sometimes, but the others have been cocci. Those I have found by the aid of direct sunlight.

I wish to thank the society for the kind manner in which they have criticised my paper.

CINNAMON WATER AS A DRESSING.

The limited use of cinnamon water as a dressing for wounds caused me to give it an extended trial in my Bellevue clinic. The strength of the solution used was eight drops of the pure oil to a quart of water. This solution was used to syringe the parts and was applied to the dressing by the patients at home. In all minor surgical cases of recent wounds (tested in hundreds of cases) it can certainly be relied upon to take the place, fully, of that malodorous drug, iodoform. In burns of the first and second degree it never failed. The same with infected wounds. The dressings were changed every other day.

Case 1. Nellie G. received a severe lacerated wound of the wrist, severing both radial and ulnar arteries. A soiled towel was at once applied as a compress. After ligating the arteries, the wound was cleansed with the solution of cinnamon, and the patient instructed to keep the dressing constantly moistened with the same. The treatment extended from April 3 to June 15. Result, cured.

Case 2. Bridget K. severely burned on the right shoulder and one-third the distance to the elbow. The dates in this case are wanting. Writing from memory, the time consumed in this case was about three weeks. The patient pleaded very earnestly for a salve, but with much persuasion was induced to continue the treatment, with a most satisfactory result. Should any of your great army of readers have an untried agent which they wish tested, I will be pleased to use it for them and report. In conclusion I would say that I intend trying the oil of peppermint and gaultheria.

F. SOPER, M. D.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITOR: A. E. MOREY, PH. B., D. D. S.

INTERNATIONAL DENTAL CONGRESS.

Our confrères in Paris held their first dental congress in 1889, during the exposition. There were nearly 500 members and adherents. For a first effort it was highly creditable and successful in spite of the opposition in France and elsewhere. In 1893 the second dental congress was held in Chicago during the period of the World's Columbian Exposition. There were more than 1,000 members, and the two volumes of the transactions are much quoted in the writings of recent authors. It is now the intention to hold a third congress in Paris in 1900. The exact date has not been fixed, but the committees are at work, and it is expected that many papers will be presented and that many members of the profession will be present from all quarters of the globe. The American committee, which was appointed at Omaha, will shortly be gotten together to form definite plans for the material to be presented to the congress from the United States. We hope that a creditable showing will be made on educational methods, legislative methods, and that papers on theory and practice will be presented to show the status of our national professional development. Our best operators will be given an opportunity to do clinical work showing all advanced methods of operating. Meanwhile, any member of the profession in good standing desiring to be present may, by forwarding his name, be enrolled (provisionally) and their names will be presented to the committee at its first meeting. A rigid censorship must be expected for all papers and communications to be presented to the congress. Dr. E. Sauvez, 17 Rue de St. Petersburgh, Paris, is the Secretary-General.

Illinois State Dental Society.

In making up your plans for dental meetings do not forget the annual meeting of the Illinois State Dental Society in Chicago the second Tuesday in May. This meeting will be largely clinical; only a few papers are to be read. We will publish the programme in our April issue.

Dental Charity.

The paper on dental charity published last month is likely to bring fruit, as the committee has already sent out circulars inviting the coöperation of dentists in this work. We hope a generous response will be made by the younger practitioners at least The hours for such work have been placed at 4 to 6 P. M., so that a choice may be made of 4 to 5 or 5 to 6. This work once a month will not entail much hardship and the clinical experience will be valuable.

Supraorbital Neuralgia.

Recently a patient who was suffering from supraorbital neuralgia accompanied by intense injection of the conjunctiva was referred to me by an oculist for examination of the teeth. There were no dead pulps on that side of the mouth. No cavities in the teeth which were not already filled—most of the fillings being small. There was one large amalgam filling in the second superior molar which was removed but the pulp was not exposed. From repeated tapping on this tooth, the injection of hot and then cold water, I decided that the responses were sufficient to justify the destruction of the pulp. This was done with arsenic and after forty-eight hours the pulp was removed, the lingual root being found calcified one-third of its length from the apex of the root. That night the patient suffered from a retinal hæmorrhage, from which he recovered in about two weeks. The neuralgia ceased and the injection of the conjunctiva disappeared within two weeks and has not returned. Was the calcification of the pulp the cause of the neuralgia?

DOMESTIC CORRESPONDENCE.

Dental Charity.

To the Editor of The Dental Review.

Dear Sir :—Regarding "The Dental Profession in Charity" as presented by Dr. C. T. Gramm, in a paper read before the Odontographic Society, and to which the special attention of each individual dentist has been called by the committee, soliciting the contribution of an hour's time each week, to be devoted to the work specified by Dr. Gramm, I wish to state that the suggestion of Dr. Gramm, and the solicitation from the committee, appeals very strongly to my heart for some reponse, and I doubt not will appeal most favorably to the better nature of ever member of our profession in Chicago, for—"inasmuch as ye did it unto the least of one of these, ye did it unto Me."

I know of no better way for "laying up treasure in Heaven." However, I wish to offer a suggestion for the execution of the good work proposed which I think would do away with most of the objections and obstacles that are liable to arise in the minds of those whose services are solicited.

I will first state some of the difficulties in the way of the dentist going to the so-called "district headquarters" of the "Associated Bureau of Charities," to operate in the mouths of the poor referred to.

There would be the matter of suitable operating chairs, and instruments and medicaments, to be provided in some way, which would occasion great inconvenience to the dentist if he were to carry them back and forth for his use at the designated place for operating, also his loss of valuable time in going from and returning to his office.

To obviate all these difficulties I suggest that the members of the profession give their time in their own offices, and have the poor sent to them with a letter of introduction and recommendation from the proper source.

I would suggest further that the children of some one family be sent to the office of some dentist who had tendered his services, and leave it to his judgment as to when he should dismiss those patients, and call for others. It would be better for any particular child to remain in the care of the same dentist, rather than fall into the hands of first one, and then another.

It occurs to me that in this way the poor could be distributed among the members of the dental profession and all be cared for in a more satisfactory manner, and with far less annoyance, and loss of time to the dentists.

Personally speaking, I will state that I could, in this way, respond to the appeal, but cannot see my way clear to follow out the plan suggested by the committee.

Sincerely yours,

H. A. Cross, D. D. S.

Books Received.

Merck's Manual of Materia Medica 1899. Price, cloth, $1.

Gout. By A. P. Luff. Cloth, price $1.75. W. Wood & Co., Publishers, New York.

Merck's Archives is a new journal, beginning with January, 1899. $1 per year. Merck & Co., New York.

MEMORANDA.

Dr. J. E. Keefe is in California recreating.

Phenalgin is said to be a good hypnotic in five grain doses.

Lycetol is said to be a good solvent or diluent of uric acid.

Dr. T. W. Brophy has gone to California for a short vacation.

Dr Geo. H. Bentley has gone to the Mediterranean for a cruise.

Dr. W. C. Barrett was in Chicago following the New Orleans meeting.

Beta-eucaine is useful to paint the gums before setting a crown—ten per cent solution boiled.

It pays better to be a dentist than an oculist. A man has thirty-two teeth and only two eyes.

It is stated that a spray of ethyl chloride will arrest hæmorrhage from the extraction of a tooth. Try it.

The Illinois State Dental Society will hold its annual meeting in Chicago the second Tuesday in May.

Dr. Lawrence Leonard, of Waseca, Minn., attended the meeting of the Southern Branch N. D. A. at New Orleans.

We expected to publish Dr. Erdmann's paper in this issue, but so far it has not been received. See page 195 for discussion.

La Revista Dental Mexicana is edited and published by Dr. C. A. Young, in the City of Mexico. It is just entering the second year of its existence.

A man died in a dentist's chair in Chicago the other day under an anæsthetic, but it was not stated whether it was nitrous oxide, chloroform or ether.

Cold Abscesses. The method of choice in the treatment of cold abscesses is the injection of iodoform in oil, ten per cent. If this fails, use oxygenated water —*Pedard.*

The Oregon College of Dentistry at Portland, Oregon, has been organized with Herbert C. Miller, D. D. S. as Dean. The first session will open about October 1, 1899.

They are still struggling with the dentists' bill in New South Wales, with some prospects of its passing. We are indebted to Dr. Alfred Burne for late newspaper extracts, concerning its progress in the legislature.

The war on bogus colleges in Illinois is on in earnest, no matter whether they be dental or medical. To stamp them out requires courage and time and money. Will you give a little time to so praiseworthy an object?

CARBOLIC ACID POISONING.

Wash out the stomach with equal parts of vinegar and water; strychnine hypodermatically.—*A. Paget Steavenson.*

SOUTHWESTERN DENTAL SOCIETY.

The next meeting of the Southwestern Dental Society will be held in Cassopolis, April 11 and 12, 1899. C. E. BURCHFIELD,
Secretary.

IOWA STATE DENTAL SOCIETY.

The next meeting of the Iowa State Dental Society will be held in Des Moines, May 2, 3, 4 and 5, 1899. WILLIAM GILMORE CLARK,
Secretary.

Dr. T. B. Welch retires as editor of the *Dental Brief* and Dr. Wilbur F. Litch will be his successor. Dr. Litch was the editor of the *American System of Dentistry* and is an accomplished writer and editor. We welcome him to the ranks.

The *Dental Register* of Cincinnati, publishes every month a list of dental colleges and the names and officers of dental societies which is very valuable. The officers of societies ought to correct these annually as some of them are out of date.

The regular meeting of the State Board of Dental Examiners will be held on March 25, 1899, at the Chicago Business College, 67 Wabash Ave., Chicago, Ill. Those desiring to take the examination should notify the Secretary ten days before date of meeting. J. H. Smyser, Secretary, 70 State St., Chicago, Ill.

In the Washington dispatches the other day we noticed that the authorities at Wurzburg, Germany, had decided to have the teeth of poor children in the schools examined and attended to free. We understand that oculists and aurists will be attached to the schools also, and render their services free, at least to the recipients.

The fifth annual meeting of the Southern Wisconsin Dental Association will convene at Janesville, Wis., the 3d and 4th days of May, 1899. A cordial invitation is extended to the members of the profession. Officers elected at the last regular meeting are: President, F. S. Knapp, Platteville; Vice President, Isaac Burton, Dodgeville; Treasurer, W. G. Hales, Mineral Point; Secretary, J. H. Reed, Lancaster, Wis.

CANADA BALSAM FOR FIXING INLAYS.

Inlays of porcelain treated with Canada balsam dissolved in benzole are much more durably fixed in position than they are when imbedded in a film of oxyphosphate cement, provided an accurate fit is obtained by grinding a circular rod of porcelain to fit into the cavity.—*W. Booth Pearsoll, F. R. C. S. I.*

MOUTHWASH FOR CHILDREN.

℞ Acidi boracici..... 3
Aquæ font. desti.....200
Tinct. myrrh..... 2
M. S. Mouthwash.—*Monti.*

TOOTH POWDER FOR CHILDREN.

℞ Magnes. carb... 5
Cret, alb.
Sodii salicyl.....āā 15
Ol. menth. pip..... gtt. vi.
M. S. Tooth powder.—*Monti.*

CHAPPED HANDS.

℞ Menthol 1
Salol..... 2
Olive oil..... 3
Lanolin.....80
M. S. Apply twice daily.—*Ritterband.*

INSOMNIA.

℞ Paraldehyde .... 2 gm.
Tinct. vanillæ..... .....20 gtt.
Syr. laurocerasi.....30 gm.
Aq. tiliæ.....70 gm.
M. S. Two or three soupspoonfuls.

AN INFLUENZA PRESCRIPTION.

Bacelli (*Gazzetta degli ospedalie e delle clin.*, 1898, No. 43) highly recommends the following combination for influenza ushered in by severe fever and nervous disturbances:

Quin. salicyl .....0.2 (3 grn.)
Phenacetin.....0.15 (2 grn.)
Camphor.....0.02 (⅓ grn.)

The above dose to be administered up to six times in twenty-four hours.

THIRTEENTH INTERNATIONAL MEDICAL CONGRESS.

The thirteenth International Medical Congress will be held in Paris, beginning on the 2d of August and continuing until August 9, 1900. The Committee

on Organization has provided for a section of stomatology, in which all foreign and French doctors practicing stomatology will be entitled to membership. The organizing committee of the section has elected the following officers: Dr. Pietkiewicz, President; Drs. Cruet and Gaillard, Vice Presidents; Dr. Ferrier, Secretary General; Dr. Rodier, Treasurer; and Drs. Chompret and Gires, Secretaries. All communications in reference to that section should be addressed to Dr. Ferrier, 39 Rue Boissy d'Anglais, Paris.

DOBELL'S SOLUTION.

The following is the formula for the popular mixture:

℞ Acid, carbolic pur.....ʒ ss
Sodii bicarb.,
Sodii borat..... āā ʒ j
Glycerin.....ʒ j
Aqua.....q. s. ad ʒ xvj

It is a most excellent wash for the throat and nasal passages, and as a spray for diphtheritic throat it is much used.

J. W. PETTIT, M. D., ON MEDICAL LAW.

"The bill now under consideration by the various medical organizations of this State, provides for a Board of Medical Examiners, whose duty it shall be to determine whether those who have been graduated from the medical colleges have the qualifications certified to in their diplomas. These examiners are to be legally qualified physicians and may be of any medical faith. No restrictions or limitations are placed upon the course of study necessary to prepare one for the examination, it being provided that: 'Such examinations shall be in the English language, and embrace those general subjects and topics, a knowledge of which is commonly and generally required of candidates for the degree of doctor of medicine by reputable medical colleges in the United States.' Such a law is freed from the bias of sectarianism and is so elastic as to admit candidates of any recognized school, provided only that he is well grounded in the fundamental principles of medicine." On account of the numerous charters for medical colleges in Illinois the profession is up in arms to get some amendments to the medical law which will give more definite control to the output of these institutions.

OHIO COLLEGE OF DENTAL SURGERY.

Dear Doctor:—We sent some days ago, to your address, a copy of the Announcement of the Ohio College of Dental Surgery for the coming session 1898-'99, and desire to call your attention to the plan of reorganization of the Alumni Association as set forth on the last two pages.

We are making an effort to revive an interest in the Alumni Association, and hope to make it a useful as well as an ornamental body.

The Association two years ago erected a marble tablet in the new college building to Dr. James Taylor, the founder of the college. The exercises brought together many of the dentists from neighboring States who knew Dr. Taylor, and appreciated the early struggles and achievements of a pioneer of dentistry in the West. It is proposed at the next annual meeting, which takes place on the day of the college commencement (April 12), to erect a tablet to the memory of Dr Geo. Watt, who was cotemporary with Dr. Taylor. Dr. Watt was widely known as a dentist, editor, investigator, and as a teacher and officer of this college.

ASEPSIS.

The ordinary scrubbing the hands with soap and water and then soaking them in a 1-1000 bichloride solution has been proven by bacteriologists as insufficient, and that to render them sterile they must be equally scrubbed with alcohol or ether for a full minute to remove the oil from the pores of the skin; then the bichloride solution can have an equal action over all the surface. If the operator has operated or dressed a wound discharging pus, he should sterilize the hands further by soaking them in potassium permanganate solution, followed by an acid to neutralize the color left on the skin. When the hands are finally cleaned, in Europe they have adopted the habit of placing the elbows at the sides and holding the hands up and forward until the operation is commenced, to insure them from contact with anything.

Numerous experiments have demonstrated that the immersion of instruments for five minutes in boiling water is sufficient for their complete sterilization. If they come in contact with fetid or gangrenous substances they should be carefully cleaned, then boiled for fully five minutes before using again; carbonate of soda added to the boiling water sufficient to make a one per cent solution prevents the instruments from rusting before again being used. I prefer gauze to sponges in operations, and I think sponges can be safely used only in large hospitals where everything is so ordered as to insure not only their proper sterilization, but equally their preservation in that condition. SHERWOOD DUNN.

ANTISEPTIC USES OF OXYGENATED WATERS.

At the December meeting of the Paris Academy of Medicine several surgeons gave their experience in the use of oxygenated water in surgery. M. Lucas Championnière said that during the space of one year he had made clinical trial of this agent, and had found that oxygenated water was an antiseptic of remarkable power, and of special value in cases of suppuration of septic infection. Solutions of ten or twelve parts by volume seemed to act best and were very superior to solutions of perchloride of mercury. A solution of oxygen is not only capable of checking putrefaction, but it will also prevent its occurrence. In vaginal hysterectomy a preliminary douching of the canal with this solution gives better results than any other antiseptic fluid. In cases of septic infection after abortion, washing out the uterus with oxygenated water is just as satisfactory a method of treatment as curettage. In addition to the properties already mentioned, oxygenated water is hemostatic. On the other side, M. Charpentier argued that the liquid would not keep, and, moreover, was an admirable culture medium for streptococcus. M. Ferrand also spoke against it, saying the peroxide of hydrogen was not only an irritant but actually a caustic. M. Monod said that, in his opinion, nothing was better than carbolic spray, and M. Labbé agreed with him. M. Laborde spoke in his turn in defense of the oxygen solution, saying that it was absolutely harmless and could be used as an intravenous injection. In reply, M. Championnière, while allowing that the solution in question was very unstable, argued that it could be obtained from the manufacturer in a state of great purity, and was certainly far superior to phenol.—*London Lancet, December 17, 1898.*

YE DENTIST MAN.

Did you ever get into a dentist's chair,
With an awful feeling of deep despair,
As this "murderous knight of the forceps" threw
A grin of malicious delight at you,
As he tipped you back with a knowing smile,
Made you open your jaws like a crocodile,
While he poked his fingers around at will,
And told you to "open up wider still?"
Did you?

Will you ever forget that toothache wild,
That made you howl like a little child,
As this fellow who "pulls 'em without pain"
After hearing your tale would ascertain
The molar that kept you awake at night,
Pick up his forceps with keen delight,
And twist and tug, and pull like fun,
Till the horrible job at last was done?
Will you?

Will you ever forget that deadly drill,
Whenever there was a tooth to fill,
That whirred and buzzed with ceaseless roar,
As deep in a cavity it would bore?
Did you ever, I wonder, fail to observe
When he'd sometimes strike that tender nerve?
Did you ever fail to let out a yell,
And make remarks that you'd blush to tell?
Did you?

—*E. A. Brinistool.*

Dear reader, please cut out the following resolutions and send them together with a personal letter to your congressman and senator. [ED.]

WHEREAS: That the United States Government deems the teeth an important part of man; see physicians' blanks.

That Dr. Fitzgerald, head surgeon of the 13th Reg. Minn. Vol., while a camp Ramsey, said: "At least half of the trouble which our men are suffering from comes from the teeth."

That Private Frank McLin, of Co. K., 12th Minn. Vol., who has a few instruments and a very little knowledge of dentistry, says: "Chickamauga May 26, 1898. I will be a full-fledged dentist when I return. I extract from eight to ten teeth every day, and I have been doing lots of cement and amalgam filling. I bought some alloy and a box of cement and pliers, excavators and explorers when I was in St. Paul, and I ordered an engine to-day. I expect to get a folding chair in a couple of weeks if business keeps up. Many from other regiments have called on me."

That Lieutenant Rensberger, recruiting officer for the 12th Minn., said: "A number of our men are having tooth trouble. I myself was among the unfortunate and had to visit our regimental dentist, private Frank McLin, who—by the way—is kept busy."

That Chickamauga, Camp Thomas, August 28, 1898, Lieutenant M. A. Hodgkins, Co. K., 12th Minn., Vol., says: "I have had trouble with my own teeth while here, and if it were not for a private who is doing a little dentistry in our company (K., 12th Minn.) who treated me, I would have lost valuable time and would have suffered considerable. I have noticed personally Lieutenant Drake, of Co. L., and a captain of the 4th Ohio, making trips to Chattanooga for the purposes of having their teeth fixed. In the best of my honest judgment there should be at least one commissioned dentist in every regiment."

That Col. Jos. Robeleter, 12th Minn. Vol., Chickamauga, Camp Thomas, Aug 24, 1898: "Dr. Laurence Leonard, President State Dental Society—Dear Doctor: The men of my regiment suffer a good deal from tooth trouble. The same occurred during the Civil War; many men suffered and lost valuable teeth, the loss of which, no doubt, affected their digestion, bowels and health generally. I believe there should be qualified dentists in the army, say one to each regiment."

Inspector General of Camp Thomas, on August 20, said: "There ought to be a dentist for every company, or, at least, for every regiment."

That It is well known that many of our Union soldiers suffered much from toothache, and lost very many teeth that could have been saved by a skillful dentist, and whose stomach, bowels and general health impaired from insufficient mastication, the result of which they are to-day drawing pensions—ill-health and pensions which could have been averted had there been regular dentists in the army.

That G. M. Williams, of Maysville, Ky., an old soldier, says: "I surely would have died from abscess of maxillary sinus during the war if I had not fell into the hands of a skillful dentist in a town where I had been sent as unfit for duty. 'Neuralgia from exposure,' was my ailment on hospital record."

G. N. Griswold, D. D. S., captain 12th Minn. Vol. Inft., says: "On the salary a private gets he cannot afford 'dentists' bills,' and if he could, he is only allowed to leave camp or garrison duty at long intervals and feels that his leave is too precious to be spent in a dentist's chair; the result is that his teeth are neglected and decay progresses until driven by pain he seeks the regimental surgeon, who is unskilled in this specialty, consequently breaks the tooth and mutilates the gum. When his tentmates have toothache they prefer to stick it out rather than be butchered, and consequently are unfit for duty. How much better it would be if each regiment had its dentist, who with a capable assistant could help wonderfully from a physical standpoint to improve the army and naval service of the United States."

THEREFORE BE IT

Resolved, that the Minnesota State Dental Association prays that there be enacted a law providing for dentists in the army and navy; and be it

Resolved, that a copy of these resolutions be sent to the president and members of congress of the United States, and also to the dental journals.

Offered by LAURENCE LEONARD.

EYESTRAIN.

Frederick C. Cheney, M. D., of Boston, Mass. (*Boston Med. and Surg. Jour.*), alludes to the importance of eyestrain as an etiological factor in the various forms of functional headache, now so well recognized both by the medical profession and the laity. He enumerates the varying peculiarities of such ocular headaches, and the many symptoms of eyestrain in general. He calls special attention to two conditions which are not sufficiently known, as being caused by eyestrain—vertigo and drowsiness. He mentions the fact that vertigo is produced most frequently by some systemic disorder, but he recites examples in which this symptom depended upon eyestrain and disappeared after proper glasses had been prescribed. While he does not credit errors of refraction with being frequent causes of drowsiness, he mentions the fact that such a connection is not uncommon, and relates cases in which such drowsiness, especially upon application for near work, was removed by correcting lenses. Examples are also added showing that in some cases at least, "that tired feeling" with which so many are afflicted is dependent upon eyestrain.—*Annals of Oph. Surg.*

DENTAL ASSOCIATION OF NEW SOUTH WALES.

The fifth annual meeting of the Dental Association of New South Wales was held at the Australia Hotel on Tuesday evening last, and was well attended.

Dr. A. Burne, president, occupied the chair. The president's report for the past year dealt, among other matters, with the present position of the Dental Bill and the untiring work of the council in its struggle to get at least eight clauses of the bill passed in a House talking nothing but Federation. The balance sheet being read showed a balance in hand of £97 17s. 3d., which, considering all the heavy expenses incurred, proved very satisfactory.

The following officers were elected for the year 1899-1900:—President, Dr. A. Burne; vice presidents, Messrs. H. Paterson and S. Chain; hon. treasurer, Dr. O. Davis; committee, Messrs. C. C. Marshall, H. S. Newton, F. A. Gabriel, J. S. Darton; auditors, Messrs. B. Corbett and C. Chandler; hon. secretary, Mr H. Taylor.

The president (Dr. Burne), in returning thanks for his reëlection, pointed out the present position of the Dental Bill, and the prospects of its finally becoming law in the near future. He also expressed thanks to the council and secretary for their support during a very trying time of office.

A vote of thanks to the chairman closed the meeting.

FORMALDEHYDE GAS.

Dr. H. E. Wood states that the chief interest in this drug centers in its powers as a germicide and disinfectant. As a gas it will penetrate not only animal tissues, but almost all organic substances, so that books infected with various pathogenetic germs could be disinfected by being shut up for fifteen minutes in an atmosphere containing the vapors of commercial formaline (40 per cent aqueous solution of formaldehyde), one part to three hundred of air. The method of Trillat is the preferable one, and consists in the use of the formaldehyd directly after its production by the passage of the vapors of methylic alcohol over red hot metal. Kinyoun has shown that none of the ordinary fabrics are injured by the gas, which is capable of completely disinfecting curtains, carpets, clothing, be

overing, and the minor forms of furniture, although it is doubtful whether heavy upholstered furniture, such as sofas and mattresses, can, in their interior, be thoroughly disinfected. The gas is so irritating that no one can remain in the room during the disinfection, but the lamp employed is automatic, and can be left to itself. It can also be used for the removal of foul odors; one-half to one per cent solution is sufficient for cleansing vessels in the anatomical laboratory. If the hands be washed with it and afterward with alcohol, they are rendered completely antiseptic, but are not stained or irritated. It does not affect instruments, and it is efficient in preparing catgut and surgical dressing. For the cleansing of an enfeebled wound, a two per cent solution is used; but for a continuous local application or free irrigation, one-fourth of one per cent is sufficient.—*University Med. Magazine.*

ORTHOFORM.

Kallenberger (*Brit. Med. Jour.*) finds that orthoform has the following properties. (1) It acts as a local anæsthetic wherever sensory nerve endings are exposed. (2) It is nonpoisonous, so that as much as 60 grn. was used in one week upon a large raw surface. (3) It is antiseptic. Cases illustrating the value of orthoform are: (1) Fresh wounds, (2) burns, (3) ulcers of the legs, (4) carcinomatous ulcers, (5) syphilitic ulcers, and (6) toothache where there are exposed nerve endings. The pain mostly disappeared in from three to five minutes, after which the local anæsthesia was complete and lasted on an average for thirty-five hours. If the exudation is very abundant an ointment should be used instead of the powder, which may be washed away. In a case of ulcer of the leg where iodoform was substituted for the orthoform there was no return of the pain for seven hours. This period of freedom from pain is more marked the more prolonged the previous application of the orthoform has been. This agent also limits the exudation. Orthoform has been used internally in laryngeal ulcers, as well as in gastric ulcer and carcinoma. A chloride in addition to the base has been thus employed by Neumayer, but for surgical purposes the chloride is unsuitable, owing to its irritating properties.

FOR SMOKERS' SORE GUMS.

Dr. Vian recommends the following combination:

℞ Salol ..... 1.0 (15 gr.)
Spir. of peppermint ..... 100.0 (3½ fl. oz.)
Tr. of catechu ..... 4.0 (1 dr.)

S. A teaspoonful in one-half glass of warm water. Rinse mouth several times a day.

OBSTINATE CHRONIC COUGH.

℞ Tinct. sanguinariæ ..... ℥ ij.
Antimonii et potassii tartratis ..... gr. i.
Morphinæ sulph. ..... gr. ij.
Spir. anisi ..... ℥ ss.
Glycerini ..... ℨ ij.
Syr. simplicis ..... q. s. ad. ℨ iv.

M. S. ℥ i. q. 3 h.

—*Dr. J. D. Ely, Toledo Medical and Surgical Reporter.*

OBITUARY.

Henry Howard Keith, D. D. S.

Henry Howard Keith, the only son of Amos B. and Katie M. Keith, was born at Salem, Mass., June 14, 1847. He resided in Boston until the beginning of the Civil War, when the family moved to Chicago. After working a short time in a machine shop to learn the use of tools he was apprenticed to his uncle, Mr. A., of New York, who was a jeweler. In 1864 Dr. Keith went to Philadelphia and entered the laboratory of Dr. Chas. J. Essig. He made such rapid progress that when Dr. Essig moved his laboratory to Baltimore in 1868 he took Dr. Keith with him, and while there he met the lady who afterward became his wife. After spending about two years in Baltimore he went to Newark, N. J., where he worked for Drs. DaCamara and Pinney until he was married, in January, 1871. His wife was Miss Nina L. Benteen, of Baltimore.

He came to St. Louis in February, 1871, and in the fall of the same year opened a laboratory. He was successively with Drs. Morrison, Eames, Park, McKellops and Lange. He attended the Missouri Dental College and graduated while with Dr. Park, in 1873, and afterward held positions in the same college, in 1875–76 as demonstrator of mechanical dentistry, and was professor of mechanical dentistry from 1876 to 1879 inclusive.

Dr. Keith's talents lay in the direction of plate work, in which he had no superior, though he had a large practice in operative work. His heart was in his profession and he spared neither time nor pains when engaged in a difficult piece of work; and the greater the difficulties the more he enjoyed overcoming them—in which he seldom failed. As an operator he was equally skilled and was extremely gentle and considerate of his patients.

His chief characteristic seemed to be a desire to help the younger members of the profession. Every one coming to St. Louis met with a pleasant welcome from him, and he always did what he could to advance them. His knowledge was given freely and heartily, and he was always eager to help or instruct others.

At Lake Minnetonka, in 1888, he contracted the liver trouble that finally caused his death. His summers for seven years past have been spent in Asheville, N. C., where he had a beautiful home. He also spent his Christmas and Easter vacations there, as the climate greatly benefited him. He returned to St. Louis in September, 1898, and, though in very poor health, he resumed his practice. His health failed very fast, and his death was the result of peritonitis. He died January 26, 1899, and was cremated at the St. Louis Crematory, as he had desired. His ashes will be buried at Riverside Cemetery at Asheville.

As an instructor he was one of the few men who seemed capable of imparting his knowledge so that the one instructed could not fail to grasp the ideas of the master mind. He was a member of a sketch club and well versed in photography. For that reason he was an adept in illustrating his subject. His office was a study in itself for neatness, convenience and all that was new in modern dentistry. His laboratory was equal to that of his office. He was considered one of the best continuous gum workers in this country. All his work in this particular line had the finish of a master artist.

He was a man who was continually striving to accomplish something that would advance his profession. He was an active member of both State and city societies; of the latter he served four years as recording secretary, and in 1882 was the president; and no better drawing card could be announced than the mere statement that Dr. Keith would either read a paper or give a talk on some dental subject. As a professional man he was a model. He was never known to speak ill of any professional brother so as to advance himself in the estimation of his patients. His professional liberality was one of his many good traits that should be observed by us all. He was always willing to assist any dentist, both financially and professionally, and nothing would give him greater pleasure than to impart his practical knowledge to any brother needing his advice. He was a frequent contributor to the dental journals.

JOHN G. HARPER,
WALTER M. BARTLETT, } *Committee.*
JOS. G. PFAFF,

ST. LOUIS DENTAL SOCIETY.

DR. A. W. FREEMAN, CHICAGO.

Dr. A. W. Freeman was born in Brookfield, Vt., a country town in Orange County, October 3, 1829. The atmosphere of the district school for the child, and the county grammar school for the youth, a preparatory for college, was the stimulating influence under which he opened his eyes when first he was ushered into this mortal life. This early school life resulted in his entering Dartmouth College in the fall of 1849. He completed the course of four years, required of students in those days, working his way by teaching district school, and graduated with honors in 1854. During the following year he was principal of the Orange County grammar school, at Randolph, V.

In 1855 he came to Rockford, Ill., and he was the principal of Rockford public high school and was thus engaged for several years. His mind turning towards professional life, he became engaged in reading along medical lines and for some time was under the tutorship of one of the physicians of Rockford. In the course of his study he became interested in dentistry and so chose it for his life work, being an earnest student of this department of medical science until his death. He gave his entire interest to the betterment of his profession and the elevation of the standard of dental education.

Removing to Chicago in 1859, he commenced the practice of dentistry and gathered around him a patronage which remained with him until the close of his long professional life. For forty years he witnessed the marvelous development of dentistry, rejoicing in its attainments and triumphs. He was a charter member of the Chicago Dental Society and an active member at the close of his life. On June 2, 1896, he was voted a life member by the society. He was one of the organizers of the Illinois State Dental Society and a member of the American Dental Association. Dr. Freeman never attempted authorship although his was a mind well stored, his efforts in a literary way being limited to one paper read before the Illinois State and one before the Chicago Dental Society.

His life has ever been that of a devoted follower of high ideals, and a promoter of the best things pertaining to the public welfare; ever striving to forward the interests of his profession and that of the community in which he lived. His

later years were years of bodily pain and suffering; but through them all he has been cheerful and of a happy, genial, hopeful mind, shedding forth a radiance of Christian fortitude and trustfulness. To those who knew him best he leaves a memory of one who inspired them to loftier purposes and more earnest efforts in the work of influencing humanity to take a higher standard of living and thinking.

Dr. Freeman died on February 23, at his residence in Normal Park, Ill., after a brief illness, passed out of this life into the great unknown. He leaves a widow and two daughters to mourn for him. The interment was at Forest Home.

Dr. A. H. Ellsworth.

Dr. Albert Hayden Ellsworth died of heart failure at his home in Green Bay, Wis., on Sunday, February 5, aged seventy-six years.

He was born in Windsor, Conn., and after a public school education took up the study of dentistry. When ready to practice he located in Milwaukee, Wis., in 1848. In that city he built up a flourishing practice until he had gained the reputation of being one of the first dentists in the State.

Failing health obliged him to relinquish his lucrative practice, at a time when his social and professional standing and his usefulness in the Plymouth Congregational Church, of which he was a member, made him a most highly respected citizen of the city. He was also an honored member of the I. O. O. F., belonging to Menomonee Lodge.

In July, 1852, Dr. Ellsworth removed to Green Bay, as he supposed, to spend the last months of his life, for his case was despaired of by his physicians; but the bracing climate of his new home unexpectedly renewed his waning powers, and he entered again upon the practice of his profession, his wide experience and fine skill winning as before a large patronage. Again his force, enterprise and integrity made him influential as a citizen. He was a warm friend of the cause of education, and for fourteen years filled successfully the position of City Superintendent of Schools.

In his death the State has lost a faithful and steadfast worker in public interests, the profession of dentistry one of those skillful and honest practitioners which are its pride, and his children a father at once deeply loved and respected. A widow and five children survive him.

THE

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ORIGINAL COMMUNICATIONS.

Cosmos and Evolution.

By W. C. Barrett, M. D., D. D. S.

LECTURE DELIVERED BEFORE THE STUDENTS OF THE CHICAGO COLLEGE OF DENTAL SURGERY, FEBRUARY 20, 1899.

STENOGRAPHICALLY REPORTED BY W. N. SAMPSON.

The lecture which I am to deliver this evening is one which oes not really belong in the usual course, but which I am ways glad to give to students, that they may have a compre-ension of certain basal truths and facts concerning the history of is world. I come not here to disseminate any irreligious views, come not here to shock any man's prejudices. I come rather to ach that which to me is the highest form, the highest expression religious faith and religious belief. I am well aware that there a prejudice against the doctrine—so called doctrine—of evolu-n: that a great many fourth or fifth or tenth rate preachers and achers feel called upon to antagonize it, because they fear it may in conflict with their own preconceptions; that is, they resist the ght lest its admission may reveal the insecurity of their position. ey fear—they know not what, but that in some way or other it ay not be strictly orthodox. Now, if there is any word in the whole cabulary that I absolutely despise it is the word "orthodox." It plies that you found your faith and your belief upon that of other man. God gave me a certain amount of reason, a certain mount of discretion; and he gave it to me to use for myself, at I might not adopt the faith of another unless it commends elf to my reason. Hence, I discriminate, I judge, I think for

myself, always in a reverent spirit, but always in the faith, in the assurance of science devoutly interpreted.

No man can have any possible conception of the cosmos, of the great universe; no man knows its bounds. Go out in the evening and look up to a clear sky, and you will see a certain number of stars. Bring the telescope to bear and magnify your field, illumine it still further—ten diameters—and you have simply brought into view ten times as many worlds; a hundred times, a hundred times as many worlds; a thousand times, you have simply multiplied the number of worlds which you can see, but you are apparently no nearer the bounds of creation than you were when you started. That is in the macro-cosmos; in the world of the infinitely large. If we go in the other direction, call to our aid the microscope and attempt to explore the world of the infinitely small, the border land of creation is as far removed to the other extreme. We may see with the naked eye certain organisms, but the limit of the unassisted, unaided human vision is reached very quickly. We bring the microscope to bear, we illumine, we magnify ten diameters, and we bring into view ten times as many individual organisms as could be seen with the naked eye in the micro cosmos, in the small world; a hundred times, a hundred times as many; magnify a thousand times, and we have simply brought into sight that which was away beyond the limit of the unaided eye but are no nearer the boundaries of the universe in that direction than we were by the aid of the telescope in the other. The universe is limitless, and the world of the infinitely small transcends that of the infinitely large.

Whence came this? What was the origin of matter? What is to be the end of all things? There is no problem that can possibly confront man which possesses the same degree of interest that appeals to him with such overwhelming significance. Whence came we? Whither are we going? I cannot consent to go to the theologian for the answer to these questions. Why? He studies not physics; he knows not that which is. He comprehends only that which is the product of his own reasoning. He believes; he has faith. Faith is an excellent thing in its place, but faith can be very badly misplaced sometimes. I want to *know*. It has been the study of my life to investigate, to study physics, until I have arrived at the point where I have little sympathy with metaphysics. I want that which I can measure, and weigh and divide, and know

that its subject has a tangible existence; which impresses itself on my outer senses, and not that which simply appeals to my mental conception. The theologian believes there is a God. He cannot prove it. I say it in all reverence. He *believes* it; it is a matter of faith with him. The scientist alone can demonstrate that there is a God. As how? Thus:

Matter has never from the very first instant in which it was called into being changed in any way except in form. Not one single atom has been added to the cosmos from the time when the great First Cause said, "Let matter exist," down to the present time. And there has never been one single atom abstracted from the whole. It all is there; not in the same form, but in actual, tangible existence. Therefore, there can have been no creation since the original fiat by which matter was called into being. If matter then is utterly, absolutely indestructible to all inherent force, if all human energy, all finite power is utterly unable to bring into being the least particle of matter, it necessarily follows that there must have been one great, infinite First Cause, which had illimitable power and ability to produce that which is from that which was not; to originate matter; to call into being from nothingness; to create from that which had no existence. Hence, there must have been a God, because only a God can possess that infinite power; only a God can use that great creative intelligence. You may call him by what name you will. All men worship some form of a great Creator, and all men, so far as I know, may be equally honest in their convictions. They may call him Jehovah, they may call him Jupiter, they may call him Zeus or Brahma or Odin; they may address him any name they will, so long as they worship the great First Cause which brought matter into being, and which governs it and all things in justice and mercy. I believe that my God and the God of the heathen, if you will, so long as we worship him in honesty and in sincerity as the great Originator, the great Protector, and the final Dispenser of all things, will not despise the homage of grateful hearts. I claim that sincere worship should be acceptable to that infinite Creator whom no man can comprehend, no matter whether it goes up from an altar of India, from an altar in Rome, in Chicago, or any other place. It is the incense of grateful hearts offered to the great Creator who called them into being, and who wisely governs their destinies.

But that of which you most desired I should speak to you is, I suppose, the scientist's idea of the creation. Men may quote me books, theological disquisitions, any kind of dissertation which they may; they are written by man, fallible man, who perhaps claims that he heard the voice of the Creator, but who may have badly translated it. There is a book, however, which cannot be untrue, and that is the testimony of the rocks whereon the finger of the great Creator has written the immutable law of nature, which cannot be misinterpreted by the man who knows its alphabet. The scientist spends years of his life in learning how to read this language of God, but, when he masters it, henceforth he cannot be greatly mistaken. I accept that testimony in preference to the assertions of any book written by human hands. I do not speak especially with reference to the Bible—that which is our Bible (because nearly all nations have their own Bible)—I speak with reverence, as dealing with the great First Cause.

And yet, no one who reads the first chapters of Genesis of our Bible in the light of the scientific investigations of later years, can fail to be wonderfully impressed with the intelligence that is shown there. Dim, shadowy, undeveloped it was, but still it contained the germ, the seed of scientific verity. I have placed upon the blackboard a little of this. Let us see how it agrees with modern thought. But first let me tell you something of what modern investigation teaches. It is this: In the beginning, at the outset, when first the great creative power called all matter into being, it was in a superheated, tenuous form. The molecules, the elements of which it was composed, were diffused, infinitely separated, just as in the highest forms of vapor. If you boil water it disperses and becomes vaporous. Then if you superheat it, it becomes something even rarer than before. All matter when first created was inorganic. I have often given you the definitions of organic and inorganic matter. Inorganic matter is that which exists as it came from the hands of the Creator, unchanged except in form. Organic matter is that which is the product of function, or growth, or of the changes which go on in organic bodies. At the outset all was inorganic; there could have been no living matter, for there could be no life under these existing conditions. The earth—how can better express it than to say that the earth was "without form and void?" All the metals, all the rocks, all the minerals, were a subtile vapor that extended throughout all space. The sun, the earth, and

were one immense nebula extending away beyond the present confines of our solar system. I will not go beyond our own planetary division, although it may be that in the outset the whole universe, boundless as it may seem, was made up of the same kind of etheric vapor. Extending beyond the farthest planet there existed this vaporous mass, this tenuous form, diffused throughout all the infinite regions of space, the molecules driven asunder by heat as far as they could be, existing simply as an immense nebula in midheaven.

That was in the beginning: "In the beginning God created the heaven and the earth, and the earth was without form, and void." Could I better express it? Infinite cycles of time passed on, for time to the Creator is the swinging of a pendulum. It is nothing—it counts for nothing. Time does not exist; it is eternity in creation. Infinite ages elapsed, and this matter which was heated to such a state of tenuity continued to radiate its heat off into infinite space. And as it became cooler and cooler it gradually drew together into separate aggregations, just as vapor, just as steam will collect and form drops of water, and then drop be added to drop until the whole of the steam shall have been condensed into fluid; so this nebulous mass began to draw itself together into vast accumulations, into immense bodies of matter, which was less etheric, but still vaporous in form. The amount that would be in any aggregation was accidental. Some of it was very large, and some of it was comparatively small.

I have not leisure to go into the consideration of this minutely. I must hurry along, that I may not exceed the time that I may with propriety occupy; I will simply say that as infinite age after infinite age elapsed, as matter began to condense itself more and more, and from the form of a nebula became vaporous, from the form of vapor descended to liquid, after a time it commenced to crystalize, and the solid rocks began to appear. Of course, you know that a large body cools much slower than a small one. Hence, the great masses of the solar system lost their heat very slowly, while the temperature of the smaller ones was reduced much faster. As a consequence, the condition of the planets and of the sun of our solar system are now just what might be expected from such a state of affairs. The sun, almost infinitely larger than any of the rest, still retains its vaporous condition. A hundred thousand miles out into infinite space shoot the hydrogen flames to-day. At

any time you can see them through the telescope, and the spectroscope reveals just what is their constitution. This is the photosphere of the sun, the vaporous mass which probably surrounds the center, which may be denser fluid. Whatever there is, exists as molten matter at the very least. It is so very large it has not yet given off its heat below the point of fusion. Venus, a lesser planet, has passed through other changes, to which I need not refer, that have modified her condition. Mars is smaller, but is still nearer the sun, and has its ruddy complexion undoubtedly produced by the highly heated condition, not because of its size, but because it is so near the larger body. Jupiter, away at the other extreme, far beyond us, is an enormous mass of matter, 1,300 times larger than the earth. It has radiated its heat more slowly, and is undoubtedly in a red hot condition. The earth is what we know of it; it is what it is.

We know that matter must have existed as a vapor, because only from such a form in the slow evolution through which the purposes of the Creator have been accomplished, could it aggregate as it has done. The earth is round; the sun and all the planets are round. They could not have assumed this spherical shape except from a previous liquid condition. At the present time the density of the earth is five times that of Jupiter. The latter has the density of a liquid, while the earth is more that of the solid. Jupiter has even now the ruddy atmosphere and appearance which betokens a heated condition.

That is the general law which has applied throughout all the infinite ages of the past. There came a time in the history of the earth—let us now confine ourselves, gentlemen, to mundane affairs—there came a time when the molten mass began to crystallize into the form of rocks. And up in the neighborhood of Baffin's Bay we had probably the first appearance of land on this globe. There was a great bay of matter, yet in a molten state, that extended over this portion of our sphere, and on its northern borders some of the first primitive rocks were formed. I have seen them in the neighborhood of the St. Lawrence River. However, most of the primitive rocks fell again into the molten mass and were swallowed up. In their fall they created commotions of which we can have no possible conception. The earth at that time was a heaving mass. There were rolling and foaming surges of fire sweeping over its whole surface. There were vapors extending into the heavens, no

only of water, not only of air, but the vapors of the sublimated metals, which again fell back in an acid rain upon the earth, melting it into itself, and producing convulsions, upheavals, volcanic eruptions of which we can have no possible conception; and the surges that beat in this shoreless sea, the convulsions that swept across it, the storms were the storms of ocean to-day intensified a thousandfold, but the waves were billows of living fire and not of water.

That must have been the condition through almost infinite ages, until finally when matter became a little more cool, and the earth fit for the habitation of something with life, when the waters, instead of boiling and seething had cooled down to a tepid condition, then creative power called into being the first organic cell, the first living thing. Previous to this all had been inorganic. Now came what we may reverently consider the supreme effort of the Eternal, and another cosmos was called into being and endowed with life, energy, potency within itself, characteristics of the Infinite. Hitherto there has been nothing but the inert. Henceforth, there shall be that which has the power of change, of reproduction. That great Creator, that originating Power, endowed that single organic cell with two great properties, and in doing so made it the epitome of everything that has lived from that day to this, whether animal or vegetable. Do you comprehend what I mean? Epitomized in that first single organic cell, endowed with two great qualities, all things which have ever lived or ever will live had their inception. Those attributes were, first and foremost of all, the ability to perpetuate its species—to procreate living things after its own image; and secondly, the ability to adapt itself to ever changing environments or surroundings—that is, to change its characteristics with the constantly varying conditions. Take the ursidæ, the bears, as a single illustration of the power of changing according to environment. In the North the color of the bear is white. Why? Because white does not radiate heat; they retain their living heat. In the South they are black, because that does radiate heat. Then the same bear has changed its color according to the climate in which it has lived; that is, it has adapted itself to varying environment. That is true of all nature throughout all the history of nature, and that it is which has originated all the lower orders of animals. It commenced with a single organic cell. What was that cell? Animal or vegetable? Necessarily vegetable; it must

have been vegetable. Why? Because only the vegetable can organize inorganic matter. Nothing but inorganic matter existed at that time, and the vegetable alone can organize that. Hence, it was necessary for the vegetable world to exist through long ages, throughout almost infinite cycles of time, that it might lay up a store of organic matter sufficient for the needs of the animal beings which were to follow in the history of the world. All creation, then, was epitomized in that one vegetable, organic, primordial cell.

I have had placed upon the board the usual subdivisions that obtain among scientists in reckoning this time:

Archæan Time—The unknown Time. That of the Inorganic.
Paleozoic Time—The earliest Organic Time. It has three ages:

1. The Silurian Age—That of the Invertebrates.
2. The Devonian Age—That of the Fishes.
3. The Carboniferous Age—That of the Coal Plants.

Mesozoic Time—The Middle or Intermediate Time. It has but one age—that of the great reptiles—The Megalosaurus, The Pleirosaurus, The Ichthyosaurus.

Cenozoic Time—Modern or Later Time. It has two ages:

1. The Tertiary Age—That of the Mammals.
2. The Quaternary Age—That of Man.

The Quaternary Age is divided into three epochs:

1. The Glacial or Ice period.
2. The Champlain or Prairie period.
3. The Recent or Historical period.

I said that in the beginning everything was without form and void. Down to the time of the creation of the first organic cell we call it Archæan time, the unknown, the unknowable; we have no direct information concerning it. God, the spirit of God, moved upon the face of the waters, but there was no living thing to make response; there was simply inorganic matter, the time being the infinite time of the Archæan age, when there was no language, no hand, no record, nothing whatever to give us any knowledge of it except as the great Creator himself wrote the history of it in the imperishable rocks as they were crystallized. How long that was nobody has any conception. That infinite cycle we call Archæan time.

Next we come down to Paleozoic time. You will remember, gentlemen, that I do not here make pretensions to a complete classification of geologic epochs. I give you a condensation of them, with the principal divisions only. Paleozoic is the earliest *organic* time. It extended from the era when the earth was cool enough to receive and nourish that first organic cell, down to the time when later and more highly organized bodies were evolved. It is divided into three ages: The Silurian, the Devonian and the Carboniferous. The first, or early Paleozoic, was the primary organic time—the primeval vegetable era—when the animal had not yet been called into being. The Silurian period reached beyond this time, and to that of the simplest forms of animal life—that is, those of the invertebrates. Then naturally succeeds the Devonian age—that of the first or lowest of the vertebrates, of the fishes. This is amply proven by fossil forms, the evidence of the immutable rocks. These show the succession, the progression of the forms of nature, but their testimony of exact dates is uncertain. They indicate the order in development of organic life, and so far it has been from the lowest vegetable cryptogams up through the vegetable phanerogams to the unicellular animal forms, the exact borderland between them being indistinguishable. The evolution of the higher and more complex animals follows these, and we reach the vertebrates, which includes the highest developments of to-day.

The third division of Paleozoic time is the Carboniferous age. At this time the air was loaded with great quantities of carbon dioxide gas, from which the great vegetables of the lower orders were developed, or in which they were developed. It was the age in which the immense endogens grew in a profusion and to a size of which we can have little conception. It was a period when great forests of tree ferns grew to a height and size of which earth has no parallel to-day. Then came some inundating cataclysm, sweeping continental forests into great yawning chasms, formed by the steady cooling of the minerals. There they were buried by some volcanic upheaval under mountain ridges of earth, where, through the long succeeding ages, they slowly underwent the carbonizing change that transformed them into the coal beds of to-day. In the Carboniferous age the sun beat down with intense energy, and in the tepid swamps the coal plants grew with wondrous rapidity, each separate one absorbing and storing within itself the radiance of the tropical sun. When to-day we light the

fires in our grates we are but liberating the rays emitted by that sun during the Carboniferous age, so long treasured up within the bowels of the earth; we are basking in the genial warmth of the radiance emitted so many millions of years ago, stored up against the time of need, as we are now just learning to store up electrical energy.

Succeeding the Paleozoic came the Mesozoic—the middle, the secondary, the intermediate time. This was the age of the great reptiles, of the megalosaurus, the plesiosaurus, the ichthyosaurus, and others of the early reptilia, an hundred or an hundred and fifty feet in length. Very few of that class to-day reach twenty feet, the most of them being quite small. The reptiles were a little higher than the fishes, because they were terrestrial animals, and it is only on the land that the highest development is reached.

Lastly, we reach Cenozoic time, which is modern, or later time, and this is made up of two ages: The Tertiary, which is the age of mammals, and the Quaternary, the age of man, in whom creation found its climax, its highest point of advancement. The Quaternary age has been again divided into three periods: The Glacial, the Champlain and the Recent, or historic. What induced that condition which marks and gives name to the first of these, the Glacial, no man knows precisely, but at that time a considerable portion of that which now forms the habitable globe was covered with a great sheet of ice of immense thickness, and it remained for a long period, and this it is which forms the Glacial epoch. Gradually this ice sheet melted away, leaving very many striking changes upon the face of the earth. Immense boulders or rocks were by the slow and imperceptible yet steady and resistless glacial motion transported perhaps hundreds of miles, and dropped in the midst of an alluvial plain at the end of the Glacial epoch. Decomposed rock and sand were carried great distances, and eventually allowed to sift down through crevasses, and thus form the very striking abrupt ridges or mounds, perhaps some miles in length, or in other instances symmetrical sand peaks hundreds of feet in height. At the borders of glaciers are found the so-called moraines, or irregular litter of rocks and sand, which mark the extremities of such glacial action. Perhaps the same mutations are taking place beneath the immense ice fields of the polar regions to-day, and that in time there may be a change of axis in the earth which shall reveal them to the men of a long-distant future.

Succeeding this epoch came the so-called Champlain period, characterized by the undulating or level prairies of the Great West of this country. This marked the subsidence of the great upheavals and the violent earthquake and volcanic changes that in the earlier times had constantly altered the face of the earth, the scars of which are even now visible in the mountain chains and the elevated plateaus of the different continents.

Finally, we arrive at the time of the evolution of man, and his development to such a point of perfection that he might be dignified with the name by which the species is now known. It is not to be supposed that this was any sudden or violent change, and hence the date of the epoch cannot be precisely stated. But the time that has elapsed since the human has arrived at such a point of perfection as to have an intelligible and recorded language has been called the recent, or historic epoch. Even during that man has been constantly developing, and he is now progressing at a rate to which the species has been a stranger in the past. This is a brief epitome of the history of this world according to the teachings of science, and as it has been written by the hand of the Creator in the rocks of which the earth is composed.

[TO BE CONTINUED.]

THE ETHNOLOGY OF TEETH.*

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It is not my purpose to present, even in a brief form, any mere tabulated statement of the racial characteristics and variations of the teeth of man. Many observations of this kind have been made, but mainly in reference to the prevalence of dental lesions and abnormalities among various races, especially as to ancient and savage peoples. With that branch of the subject we will have nothing to do, but will endeavor to take a general survey of the field of ethnic odontography with a view to the general consideration of the normal variations of the anatomical features of the teeth and jaws which may be sufficiently pronounced and distinctive as to have a possible ethnic value. This will, therefore, be a general and tentative consideration of the subject, preliminary to its more elaborate consideration, which I hope may become possible.

In the first place, it is a curious and a rather surprising fact

*Read before the Chicago Dental Society.

that the data available are very meager from which any conclusions can be drawn. This lack of material for anything like a scientific consideration of the ethnology of the teeth, has been bewailed by all writers who have touched upon the subject, as approached from any standpoint. The dictum that Mantegazza gave forth years ago still holds good, that "an ethnological study of the teeth has yet to be made; it will reveal distinctive characters of great importance." It has been a matter of disappointment in the pursuit of reliable data to find that even the physical anthropologists have so little to offer regarding the minute anatomical features of the teeth, which we, as dentists, are accustomed to observing. Some of the leading anthropological writers give general observations upon the teeth (some of which, *en passant*, are erroneous), but do not discuss the minute features at all. Thus a famous lecturer of the anthropological school of Paris says of the teeth of the Mongols, that "they present nothing remarkable either as to size or shape." Such observation, or the lack of it, does not suit us as dental specialists. And this, in comparison with the minute and painstaking observations he gives regarding the details of the various indices of the skull and jaws which he has worked out so thoroughly and elaborately as to have a distinct and positive ethnical value. Various museum curators also tell me that there is no such thing as an ethnology of the teeth; that the subject has been neglected and should be investigated. Mr. Charles Tomes in a recent letter says, "I am afraid I cannot give you much help on the ethnology of the teeth. We have lots of allusions and descriptions of the teeth, but they are all scattered in the midst of other matter and sadly in want of collecting."

We as dental specialists, accustomed as we are to great variations of the anatomical features of the teeth, as they come under our observation in practice, cannot but believe that there must be differences in the teeth as between races that ought to have a positive diagnostic value. It would seem that we have a duty in the direction of working out the science of ethnic odontography that may be of service in the field of physical anthropometry. We have a better knowledge of the minute features of the teeth and of their variations and are in some ways better equipped to do this work than the general anatomist and anthropologist.

Of course, many minute features are difficult to isolate and

classify so as to make them of positive value as a diagnostic medium. The variations as between the individuals of any one race are so great as to make the variations as between races still more difficult to differentiate. The whole gamut of possible variations of the teeth seems to be presented in the individuals of any race which makes more confusing the prospect of distinguishing the distinctive features that may be of ethnic value. But we know also that the mass of facts bearing upon any science, some of them very minute and general, are very confusing to the uninitiated and require special preparation of the student, and special skill and patience in working out observations. So it must be with this subject. However unpromising it may seem on account of the obscurity of the factors involved, we must not be discouraged but must take up our duty courageously and let the results take care of themselves.

As Tomes says: "There seems to be great variation of the teeth, among all races of men — least among savages — most among the civilized races. In the anthropoids there is greater constancy of the minute anatomical features, but even with them there is occasional degeneracy of the teeth, showing a tendency to variation which in them has already resulted in the suppression of the third premolar—which is still present in the American monkeys—and of the third incisors and the fourth molar." These teeth sometimes reappear as the so-called supernumeraries. So we have a general degradation of the teeth, and consequent increasing variation, originating away back in our Simian ancestors. Mr. Ward said (A. D. A., 1897) that "Two main factors have contributed to retard the dental specialization of the primates. First, their arboreal habits, which necessitated a diet more frugivorous and omnivorous, and hence requiring less comminution; and second, the highly specialized prehensile forelimbs, which relieved the mouth of its manipulative functions. Add to this in man's case, the invention of the knife and of cooking, and the causes of our dental inferiority stand confessed, for the moment a tool intervenes to aid the function of a bodily organ, that moment all onward evolution of that organ ceases. That a retrograde evolution or degeneration of these organs is at work in man is apparent to the student of physical anthropology." It is a self-evident fact that the variations of the teeth are due, in a large degree, to their degenerate condition, for as observed before, these variations

are less frequent and the features more constant as we approach the lower stages of our phylogenetic history.

In that line is the opinion advanced by our leading evolutionists that the human race, especially its higher and more civilized varieties, is in a stage of rapid evolution. This is especially observable in relation to the white races, which are evidently undergoing rapid changes of structure in the strenuous efforts of nature to adapt the organism to rapid changes of environment with which civilized man is surrounding himself. So the modern European races present many varieties, aside from the results of race mixture, which are due to the efforts of nature to meet new conditions continually being presented. These changes make the descendants of Europeans to-day a very heterogenous mass. Some of these varieties are self-limiting and will end only in the extinction of varieties thus evolved, but others will eventuate in the creation of new varieties. Evolutionists say that this chaotic condition of the race and its great flexibility and susceptibility to the effects of environment in producing variations, is paralleled by the condition of the mammalia in the great Eocene periods, when so many forms were evolved, some of which have descended to our own times as distinct species. The rapid changes of structure that the descendants of Europeans are undergoing to-day is reflected in the teeth also, which, as we well know, are varying greatly to adapt them to changing food habits.

But as we go downward in the phylogenetic scale we find these features more persistent and hence of more diagnostic value. Just as the wild species of animals present fewer variations than their domesticated descendants—who have been surrounded by artificial conditions and environments inducing new variations—so the savage man with few variations in his surroundings presents fewer variations in his structure as compared with his highly civilized brother who has made new environments for himself with corresponding effects upon his structure. So we must look to the savage man for the purer types.

It is highly probable that the great variations between the individuals of the higher races which we are accustomed to ascribe to temperament are the result more or less directly of: First racial inheritance; and second, adaptive variation. We recognize types of individuals which are distinctly traceable to preceding ethnic types and as such are readily explained; such, for instance

as the blonde and brunette types of Europeans. These are distinctly ethnic variations. But aside from these, there are organic and physiological variations that—not considering those that are idiopathic or pathological—are directly due to influences which come under the general head of surroundings or environment. These lead to organic changes affecting the development of the individual which, becoming permanent, form types. Some produce organic defects and tissual degeneration and are therefore self-limiting and lead to extinction of the variety. Some others perpetuate themselves and by surviving come to have an ethnic value, for they distinguish distinct groups of individuals. When we shall know more of these variations, and the structural and functional alterations that accompany them, we shall be able to classify them so that they shall have a diagnostic value. For the present, for want of a better theory, we say that these variations are due to temperament and that temperament is due to the preponderance of different elements in different proportions in different individuals—and we are really not much further along than the ancients with their humors and fluids. The name temperament is but a mask for our ignorance.

But for the present, we wish to discover if the teeth of different races present variations which are sufficiently distinctive as to be of diagnostic value. Our survey will be general to the end of grouping such features as we may know have a more or less real value, without going too much into detail, pending further observations on the subject.

And first as regards the jaws. As Prof. Geo. A. Dorsey says (*Den. Cos.* Vol. 49, p. 213) "In the recent phylogenetic history of man's face, each bone which enters into its formation has been greatly modified. This is especially true of the bones which comprise the jaws. As the forehead has become more and more prominent, the prognathic character of the jaws has greatly diminished, and at the same time there has been a corresponding decrease in the total length of the hard palate. As the hard palate decreases in length, one of two results follow; either the alveolar arch shortens and thus there is a diminished extent of the dental arcade, or the alveolar arch remains of normal absolute length and then there results a greatly increased breadth of the hard palate. Variations in the total length of the alveolar arch give rise to innumerable variations in the number and position of the teeth." The promi-

nence of the lower face, the jaws—prognathism, as it is called—is a characteristic of the lower races of mankind, and they approach the anthropoid apes in this respect. In the higher races the jaws recede and diminish and the brain enlarges and advances the cranium over the jaws. This is orthognathism, or the vertical face—as characteristic of Europeans. As we descend in the scale the jaws become more and more projecting and prognathous and the brain case recedes. Of course there are some exceptions, but the rule is of general application. Most savage tribes are prognathous and the remains of fossil man are especially so. The jaws are heavier and stronger in low races; the horizontal ramus is reduced; the palate and alveolar arch are lengthened so that the third molars are visible from the side while in the higher races, they are concealed by the ascending ramus. There is also greater width and depth of the hard palate, as shown by Dr. Talbot's investigations, although there is great variation and uncertainty regarding this index. A conspicuous feature is the form of the chin. In the quadrumana, the chin recedes rapidly backward from the alveolar border, the latter and the lower incisors being inclined forward. This is also marked in the remains of fossil man found in Europe, and is also prominent in the lower living races of mankind. As we rise in the scale the teeth become more perpendicular, the jaws recede and the chin advances until in the higher races it is quite prominent and full, as in Europeans. Going downward in the scale the chin recedes more and more until the type of fossil man is reached, which is of quite a Simian form.

The teeth of man, as we know, are closely related in number form and structure to the apes below him, and remotely to various members of the quadrumana. Indeed, like other organs, they bear in their structure the history of a long line of descent and many of the indications of their origin can be read with some certainty. As Ward again says: "As the heraldic divisions of a coat of arms convey to the practiced eye information concerning forgotten ancestors and their valiant deeds, so, too, is man's genealogy blazoned on his molars, where he who will may read." There is not so much of a gap between the low races and the higher apes as between the lower and higher races of man. As the teeth of man are strong and well made they approach the Simian form and integrity; as they are defective and ill-formed they depart from it. The structural integrity of the teeth is much more deficient and

legraded in the higher than in the lower races. The teeth of man n general are degraded in form and structure and much reduced n specialization as compared with, for instance, the highly spe-ialized teeth of the carnivora and herbivora. Some of his teeth re quite primitive in type, as the quadritubercular molar, which s found far back in the Eocene, and occasionally this lapses into he still more primitive form of the tritubercular molar. The eversions to lower forms often presented are of peculiar interest, nd exhibit their descent and relationship in a remarkable degree. The teeth of man being rudimentary as compared with the lower rimates, these reversions are not unexpected. The distinguish-ng features of the anthropoid apes, and even of the monkeys and emures, we sometimes see repeated in man ; thus a third incisor, third bicuspid and a fourth molar sometimes occur as reversions o lower forms in which these teeth are present. The upper bicus-ids sometimes have three roots and the lower two, like the quad-umana. The second lower molar in lower races has the fifth ubercle, which is a Simian feature. Other items of reversions to uadrumanus, or even insectivorous dental peculiarities, are not ncommon.

The incisors project forward and meet edge to edge in the es and this is repeated in the low races; but as we ascend in the ale they become more vertical and the edges lap. The laterals e wider in the apes, but in man they become narrower so as to e quite in contrast as to the width of the centrals. Cingules on e lingual face of the upper laterals are found in man, which is a version to the form in the apes.

The canines are large and carnivorous in the apes, but are ch reduced in man, and present some configurations, showing eir descent and relationship. They present some ethnic pecu-rities in man as well.

The bicuspids are smaller and have but one root in man, as mpared with the apes, in which they have three roots above and o below, like the true molars. By reversion they occasionally ve three roots above in man and two below.

The true molars increase in size from first to third in the apes d also in some lower races. In the higher races of man they crease in size from front to back. The cusp patterns of the man molars have been the subject of interest to many observers account of their seeming to illuminate in some degree the prob-

lem of man's descent. It is with difficulty that the tubercles can be studied well in lower races, as they are usually much worn and abraded by the hard usage to which the teeth are put by all savage tribes owing to the hard and gritty nature of the food employed and to their still using them as tools. Topinard found by investigating some 600 skulls of various races that the first upper molar was quadricuspid with the oblique ridge well marked in 99 per cent. So that the first molar is constant in all races. The second molar had four cusps in 66 per cent, three and one-half in 18 per cent and three in 16 per cent. It has four normal cusps in most lower races, as the Malays, Melanesians and Australians have it in about 80 per cent, while in Europeans it falls to 58 per cent. The third upper molars in all races have four cusps in 37 per cent, three and one-half in 11 per cent, three in 39 per cent, two in 5 per cent, and irregular in 6 per cent. The first lower molar of all races has five cusps in 82 per cent, four and one-half in 4 per cent, and four in 10 per cent. So that it, too, retains its type strongly. The second has five cusps in 24 per cent, four and one-half in 10 per cent and four in 64 per cent. It is usually quadritubercular in the higher races, but varies to the fifth tubercle in low races, which is a Simian feature. The third lower molar has five cusps in 66 per cent, four and one-half in 6 per cent, and four in 31 per cent, but is very variable. Topinard concludes from his observations that the teeth of man are in process of transformation, the lower molars tending toward the quadricuspid type with a cruciform fissure and the uppers toward a tricuspid type. In the lower molars he thinks the fifth cusp tends toward the distal corner of the crown until it disappears, as the lower molars are becoming quadritubercular.

It is the disto-lingual cusp, or hypocone, that tends to disappear in the upper molars with the effect of producing the tritubercular molar. This is held by Cope to indicate that the upper molars of European races tend to revert to the trituberculate lemurine type.

Prof. Cope said in regard to this brilliant generalization (Am. Naturalist, 1886, p. 941) that "The quadritubercular type of the upper molars of man belongs to the primitive form from which all the upper molars of the placental mammals have been derived and this has in turn itself been derived from a still earlier tritubercular crown by the addition of a cusp at the posterior internal part

Considerable significance attaches to the question as to whether the superior molars of man are to be regarded as quadritubercular or tritubercular. The lower molars are also typically either quadritubercular or quinquitubercular ; for in them the fifth tubercle is liable to great variation. In the nearest allies of man—the anthropoid apes—the superior true molars are all quadritubercular although the hypocone, the disto-lingual tubercle of the third molar is usually smaller in the chimpanzee. The lower molars are usually quinquitubercular in the apes, the gorilla not infrequently adding a sixth lobe on the external posterior margin of the crown. The molars in the monkeys are usually quadritubercular—without the fifth cusp in the lowers—except in some species as the *Pithecia* and some others, where the superior molars are tritubercular. In the lemures the third and second and sometimes the first upper molars are tritubercular in nearly all families, living and extinct. The tritubercular form is well marked in *Anaptomorphus*, that supposed ancestor of the primates from the Eocene of the West.

"So it will be seen that the reappearance of the trituberculate molar in man constitutes a reversion to the lemures and not to the anthropoid apes or monkeys proper and among lemures the type to which it reverts is that which presents the closest resemblance to man in other parts of the dentition. The genus answering to this best is *Anaptomorphus*." Prof. Cope examined many crania in the great museums and found the tritubercular upper molars in 4 out of 25 Slavs ; 7 out of 23 Greeks and Italians ; 6 out of 22 Germans and Scandinavians ; 6 out of 8 French ; 20 out of 30 Euro-Americans ; 19 out of 28 Eskimos, etc. The tendency was therefore greatest in the French and Euro-Americans. The Eskimo, as you know, are unique among savage tribes in the large proportion of suppressed or degenerate third molars they exhibit.

The phylogeny of the human molar has been pretty thoroughly worked out. In tracing its evolution from the earliest forms, the various stages it has passed through are now well understood, and it may be mentioned in passing that these studies are well worth the exercise of our intellectual powers, since they throw light upon greater biological problems which bear upon the phylogeny of our species.

The third molar of man is not now considered to have much value as an ethnic feature on account of its erratic habits. It is so erratic in all races as to present no special features that can be

said to have any racial significance. It is irregular and uncertain as to number, it is more frequently suppressed in the higher than in the lower races, but it also presents all the features of irregularity in low races as to number, form and structure that are found in higher races. It begins, in fact, to decrease in form in the anthropoid apes, for the chimpanzee has third molars that are smaller than the other molars, and this tooth is missing entirely in the little marmoset monkeys of America. The fact seems to be that it is an organ that is in process of disappearance in the primates, and that it is most irregular in man, and, most of all, in the higher races. There is no constancy in any race as to the ratio of its erratic habits, so that statistics on this point are practically worthless for deductive purposes. The nearer the apes in general structure a race may be, the larger and more functional and more constant in form and number the third molar seems to be, and more animal-like. The higher the race, the more erratic and uncertain it is, and the fewer Simian features it presents. That is the most we can say for it. Its special anatomical features are so inconstant and unreliable as to supply no basis for generalizations. Its normal condition seems to be that it should be *ab*normal as compared with the other molars. We must consider that it is an organ in process of suppression, and that it is in consequence subject to vagaries of form and structure due to the efforts of nature to abort it.

To go into detail briefly as to some of the features which characterize the teeth of different races, we will notice first the teeth of the most ancient examples of our race that have yet been discovered—the fossil men of Europe. Their remains have been found in well identified geological horizons so that the authenticity is undoubted and their age immense. The latter is shown not only by the strata in which they were found but by the degraded and animal features they exhibit, showing that they were indeed of the early varieties of our species, and that they had not yet been well differentiated from their Simian ancestors. They possess the ape like features of the teeth and jaws very strongly. The prominent superciliary ridges and glabella, the retreating forehead, the pronounced temporal ridges, the thick cranial walls, the massive zygomatic arches, the prognathous and massive jaws and mandible the retreating chin, etc., like the quadrumana. The large molars which increase in size from front to back, the large and functional

third molars implanted by three distinct roots, the elongated lower molars, the fifth tubercle on all of the lower molars, the proportionately great size of the bicuspids, the heavy, long and ape-like canines, the centrals and laterals being of nearly the same width—a Simian feature—all point to a low grade of development in the phylogenetic scale. Prof. Cope described these remains some years since (Am. Naturalist, 1893, p. 321). After dwelling upon the Simian characters in the skeleton and denture exhibited in low races, he says regarding the jaws and teeth of the fossil man: "What had been long suspected is now established that there dwelt in Europe during Paleolithic times, a race of men which possessed a greater number of siminoid characteristics than any which have been discovered elsewhere. The important discovery of the skeletons in the grotto of Spy, which were nearly complete, demonstrated that the men of Neanderthall, of Constadt, and Naulette, all belonged to the same race. The superciliary ridges were more prominent than any living race and other ape-like features were most remarkably shown. The retreating chin, like the apes, is most marked—there is really no chin at all—like the quadrumna. The dentition shows that the molars increase posteriorly, to the same degree they do in the apes. The upper molars are full quadritubercular and the hypocone, the fourth cusp, is as large as the rest in all of the crowns. The third molars have three widely divergent roots, like the other molars. The bicuspids and canines are large, relatively to the true molars. The canine exceeds in size those of the Australians of to-day. The lower molars are prolonged anterio-posteriorly, like those of the apes, especially the orang. The transverse diameter of the crown is also contracted in the posterior half, which is unlike any living human race and resembles the apes. Summarizing altogether he concludes that the man of Spy takes the lowest position among the known subspecies of man. The flints and implements found with the remains show that he belonged to the later Paleolithic period, but not to the still older. It will be still interesting to discover the still older Paleolithic man."

Among living races the Australian is the lowest and presents the most Simian features. The Australoid races comprise the Australians, Tasmanians, the aboriginal tribes of India and Polynesia, and probably others. The stock is distinct and well marked, and its extent over the ancient world must have been wide.

Among other low features, there is excessive prognathism, inclination of the incisors, retraction of the chin, heavy jaws, etc. The skull is dolichocephalic and the jaws are square and prominent, partaking of the general form of the head. The teeth are large, white, coarse and square, with the minute features well marked. The teeth are macrodont, according to Flower's index. The molars do not decrease from front to back, but tend to increase in size, the third being large and functional. It is often larger than the other molars and rarely deformed or missing. The hypocone is well marked in all the upper molars, there being no tendency to trituberculism. The second lower molar has the fifth tubercle like the other lower molars, whose crowns tend to elongation. The canines are long and conical, an orang-like feature which is common to Australoid people. Supernumerary teeth, especially fourth molars, are found. In the New Caledonians and some other Australoid people, the central incisors are so large and insectivora-like as to show their form through the lips. A few features, therefore, are distinctive of the Australoid type and have an ethnic value.

The Negroid race includes the Negroes of Africa, the Negrillos of Asia and Polynesia, and other black people not Australoids. They are dolichocephalic and usually prognathous, although some exceptions exist to the rule. Like the Australoids, the entire lower face is drawn forward by the prominence of the jaws so that the third molars appear anterior to the ascending ramus of the lower jaw. The teeth are large, thick, dark colored, coarse and ape-like. The incisors project forward so that the edges meet at an angle. The chin retreats, but not so much as in the Australoids. The molars are large and wide, macrodont, and are of the same size, or increase from front to back. The third molars are large, have three distinct roots, and are full and functional. Rarely they are reduced in form or suppressed. The hypocone is present in the upper molars and there is a tendency to the production of the fifth cusp, the hypoconule. This is sometimes found even on the third molars. Fourth molars are not uncommon. The canines are large and conical. The alveolar process is often thickened around the roots of the teeth to form prominent ridges just beyond the necks. The gums are dark or mottled, the pigmentation of the skin extending even to the mucous surfaces. These features are quite characteristic of the Negro.

The Mongoloid race includes the Mongolians of Asia—th

Chinese, Tartars, Turks, Siberians, Eskimo, Japanese, Malays, etc. Having a brachycephalic head, there is little real prognathism, though some prominence of the jaws. The incisors are inclined forward to some extent, yet there is a well developed chin, but not so full as in Europeans as the incisors are not yet vertical. While most Mongols are brachycephalic, the Eskimos are a notable exception, who are dolichocephalic. The jaws are rounded in relation to the brachycephalic skull. The teeth are large with heavy, prominent tubercles and cusps. The bicuspids are large as compared with the molars. Betty says the Japanese sometimes have many cusps on the molars, meaning probably that the hypoconule or fifth cusp or cingule, is not uncommon on the upper molars. We are greatly in need of closer observation of the minute characters of the teeth of the Chinese and other Mongols. The Eskimos are dolichocephalic but have round, rather small jaws and teeth. They are unique in having the third molars more irregular than most savage tribes. The discoloration of the teeth, among the Mongols by the use of the betel nut has prevented casual observation of their natural characteristics.

The Americanoid race includes the pre-Columbian people of North and South America, south of the Eskimo belt. There is much variation among the American Indians as to head and jaw forms. Some of the low tribes are prognathous, and the higher and more advanced tribes are decidedly orthognathous, as much so as the Europeans. The teeth vary also, but are classed as mesodonts, but they vary from macrodonts to microdonts in Flower's scale. The teeth are generally large, strong and describe a wide arch. No special features have been recorded. The third molars, Betty shows, are as erratic as in other races. The mound builders had fine teeth, which when not much worn (as is very rare in their skulls) were large, yellow and coarsely made. The third molars were as large as the other molars. They were prognathous. Dental diseases and deformities were not uncommon among all American Indians, ancient and modern. Betty notes the lingual cingule as being present. The fifth cusp was variably present, especially in the mound builders and some ancient and low races.

Europeans are divided into two distinct types—the light race, the Xanthochroid, and the dark or Melanochroid. The Europeans are microdont, orthognathous and mixed dolichocephalic and brachycephalic. The teeth are vertical, and both wide and narrow

jaws are found. In fact, they are so mixed in types and heredity, and atavism have played such havoc with all types that nothing is certain as regards Europeans. Hence statistics taken at random from the population of European countries are practically valueless. Pure types cannot be isolated.

The Xanthochroids, or light Europeans are dolichocephalic and usually have large, light colored teeth, set in square jaws with prominent canines. They are more Simian in type than the dark races, the third molars are more like the other molars, the hypocone is constant above, and the fifth tubercle on the second lower molar sometimes occurs; the fifth cusp, or hypoconule occurs frequently on the upper first molar and cingules on the laterals are common. The dark peoples, the Melanochroids, are of smaller stature, brachycephalic, small round jaw, small teeth, the incisors and canines much reduced; the tritubercular upper molar is common; the third molar is often suppressed and usually degenerate in form; and the Simian features absent in general. In fact the Melanochroid type in Europe is the farthest from the apes and is the most degenerate. On some important branches of the Melanochroid type of Aryans, as the Egyptians, Semites and Hindoos, we lack data from careful observation. With the ancient Egyptians, as of many ancient peoples and savages, the teeth are usually so much worn as to obliterate most of the minute features.

But these few details show only what we could wish to accomplish in the way of isolating and differentiating minute anatomical features with a view of classifying them in relation to their ethnic significance. As other parts and organs of the human body have been so classified, it is not too much to ask that as much should be done for the teeth. So we return to our first proposition that is a scientific work that should be undertaken by the dental profession whose members are equipped in a peculiar manner for it.

Glossitis—A Case in Consultation.*

By W. H. De Ford, D. D. S., M. D., Cedar Rapids, Iowa.

The case to which I call your attention this evening is a peculiar one. It is denominated glossitis for want of a better term. It is glossitis only in the sense that it involves an inflammation in, and an enlargement of the tongue. Macroglossia does not properly describe the condition nor does hemiglossia.

The patient Mr. Chas. G., age twenty-six, a laborer, enjoying the best of health, with no history of venereal disease in himself or parents, called on Dr. H. L. Walker, of Cedar Rapids, Iowa, an eye, ear, nose and throat specialist, September 7, 1898. About six week prior to this visit his tongue commenced to swell and had gradually grown worse until work, eating and sleeping were impossible.

The first thing noticeable was imperfect enunciation. It was difficult to understand the patient on account of the enlarged condition of his tongue. The second thing noticeable, and that in a marked degree, was the offensive breath, which was almost past endurance. Visual examination showed the following condition: The middle and posterior third of the left side of the tongue was greatly swollen and inflamed, to a sharp demarcation along the median line. By digital examination on the dorsum of the tongue could be felt several hard nodules. On the side of the tongue opposite the second molar tooth was a good sized cavity filled with decomposed food and broken down tissue, with a muco-purulent, highly offensive discharge. By syringing with warm water and by the use of a probe the cavity was fairly well cleansed. The index finger could now be passed into the opening an inch and a quarter to an inch and a half toward the root of the tongue, and the little finger quite a distance further. The cavity likewise extended toward the median line and the tip of the tongue. Upon closer examination six or eight smaller cavities were found to open into this larger cavity, the cavities being separated from each other by thin partitions.

On the dorsum, but practically on the underside of the tongue, were several little tubercles or pustules exhibiting yellow points or heads. Upon opening these a drop or two of pus would ooze out. These would disappear and others form in different parts of

*Read before the Chicago Dental Society.

the tongue to take their place. This continued all during healing. One large pustule at the tip of the tongue was very persistent—continued to the last, and always bled freely when opened.

So far as could be noticed, no systemic symptoms were present. Pulse was normal at all times. Pain was entirely local, with exception of the left ear, which was complained of for a night or two previous to his first visit to Dr. Walker.

It might have been well to have examined the pus or exudate, but the mixture with putrefactive organisms might have made it unsatisfactory also.

The case was treated with antiseptic solutions for ten days with little or no improvement. At this juncture of the case Dr. Walker thought perhaps the teeth might have something to do with the condition, and asked me to see the patient with him. Upon examination with the mouth mirror we found a large cavity of decay on the lingual side of the lower second molar tooth, involving the grinding surface and the pulp chamber. The edges of the cavity were razor-like and dentated. The pulp of the tooth was putrescent, and, in addition, the pulp chamber and the cavity in the tooth were filled with the fœtid discharge from the tongue. I advised extraction, and operated the same afternoon. The odor upon removing the tooth was something beyond my power to describe; by the side of it the contents of an abscessed antrum is sweet. The patient expressed a great sense of relief at being able to move the tongue without experiencing the knife-piercing agony of several weeks' duration, when every movement of the tongue came in contact with the sharp edges of the tooth.

The antiseptic washing was continued, and in addition the iodide of potassium administered three times per day. The parts healed kindly and quickly. Last Sunday I saw the patient again in order that I might go over the case prior to preparing this report. I found that the right side of the tongue is now enlarged, but there is no tenderness on pressure and no pain at any time. Upon inquiry, the patient responded that it felt altogether different from the left side when it first commenced to swell.

I have looked up various authorities and consulted a number of specialists, but have been unable to find a similar case. I can place it under no other head than that of phlegmonous or suppurative glossitis, the sharp edges of the carious tooth being the exciting cause. The unilateral characteristic, the enlargement, the deep cavities, all coincide with it.

The odor must be attributed to putrefactive changes; the peculiar muscular structure of the tongue might explain the somewhat slow course of the inflammatory process. The absence of a syphilitic infection and history of secondary lesions must exclude all thought of gummata of the tongue. Tuberculosis cannot be considered in this connection. As to this starting in a preëxisting lymph, angioma or cystic tumor, I do not regard as probable. The enlargement was too sudden for tumor formation.

This is certainly an unusual case. I believe the condition on the right side of the tongue is due to metastases.

PROCEEDINGS OF SOCIETIES.

Chicago Dental Society.

The thirty-fifth anniversary meeting was held Friday, February 3, 1899, at the Palmer House, with the President, Dr. J. E. Hinkins, in the chair.

The president delivered a brief address, after which Dr. M. L. Rhein, of New York, read a paper entitled "Pyorrhœa Alveolaris." See page 163.

DISCUSSION.

The discussion was opened by Dr. A. W. Harlan: The position that I stand in to-night is not of my own choosing. It was only two days ago that the committee having this matter in charge decided that I should open this discussion, and as Dr. Rhein is a particular friend of mine, and I was partly instrumental in getting him to read this very excellent paper, I felt under the circumstances that as no one would be able to read it before the meeting, I would step in at the moment and do what I could to either fix this subject more firmly in your mind or tear away the foundation on which it rested. I feel that every one in the room must have been much instructed by this paper. There were some things in the generalizations that you may not agree with, and I am at a loss whether to say anything about the two principal points in the paper or not. Shall I discuss the paper from the standpoint of etiology, or from the standpoint of treatment? Dr. Rhein, so far as I know, is the only man in the dental profession who has attempted to classify in any way the various forms of so called pyorrhœa alveolaris, and I believe that he has made that more clear to-night than he did in the paper presented by him before the American Dental Association in 1894, at Old Point Comfort, Va.

He speaks of tubercular pyorrhœa, pericardial pyorrhœa, and those are sufficient to indicate the various prefixes of the different forms of pyorrhœa. What are we to understand by that? Do we understand that tuberculosis is the cause of that form of pyorrhœa that we see in a tubercular subject, or that the fatty degenerations around the heart, the so-called liparous pyorrhœa, are the cause of the loosening of the teeth and of the melting away of the alveolar process? Or, do we understand that the other form of pyorrhœa, the complex pyorrhœa, is brought about through the agency or the inception of that particular disease, or is it only concomitant, and must we first have the initial lesion as he said in the outset of his paper for the beginning of the loosening of the teeth and the wasting away of the alveolar processes? Does the jaw or maxilla itself waste away, or is it only the fragile supporting process of the roots of the teeth that is wasted in the loosening of the teeth? Did not the author say that he challenged the position of those men who said that the extraction of the teeth cured the disease? Did not he say that he was the first to issue that challenge? There are no cases on record until the author of the paper reports them where the mucous membrane and the tissues covering the jaw do not heal symmetrically after the extraction of so-called pyorrhœal teeth. When he places those cases on record, then we are ready to admit that we are wrong.

It seems to me that in discussing the causes of the loosening of teeth we wander away from the point which was first stated, perhaps most correctly, by Witzel, in a paper he read a great many years ago, in which he took a position that the loosening of the teeth was an infectious alveolitis, and if we have a catarrhal condition of the mucous membrane of the mouth, or if we have a tuberculous subject, or if we have lead poisoning, mercurial poisoning, syphilis, or anything like that, those factors merely tend to aggravate, and they are not the starting point in this disease. There are thousands and thousands of teeth that are being loosened all the time, and you can ascribe a certain number of them to injudicious extraction, fractures of the jaw, injudicious wedging, the injudicious use of toothpicks, etc., but the whole question of the loosening of teeth is not dependent upon a uric acid diathesis or anything of that sort. I believe the disease under certain conditions is dependent upon a microörganism that has not yet been discovered and isolated, and I think we will eventually reach that conclusion.

With these remarks I leave the paper in your hands, merely ishing to thank the author of the paper, coming all the way from ew York to Chicago to read it. While I agree in the main with im, yet I do not think he has struck the right solution of the ausation of the loosening of teeth.

Dr. TALBOT: Before discussing this subject, I want to ask r. Rhein two or three questions. Have you ever made any xperiments, doctor, to demonstrate the claim you have made in ie paper in regard to uric acid being deposited at the ends of the oots of teeth?

Dr. RHEIN: I have. I have found uric acid among other eposits.

Dr. TALBOT: That is sufficient. There are two papers which ill go down to posterity as curiosities in the dental literature, one y Dr. Pierce, of Philadelphia, on the subject of uric acid, and the ther by Dr. Rhein, of New York, read somewhere in the East, of hich the paper to-night is an extension. The paper of Dr. ierce will not be looked upon with as much interest as the one of r. Rhein since that Dr. Pierce is not a physician, while I believe r. Rhein is. It seems strange that Dr. Rhein should advance the ame views to-night that he did in his paper some years ago. He ien mentioned different kinds of pyorrhœa—pyorrhœa of tuber- ulosis, pyorrhœa of uric acid diathesis, pyorrhœa of diabetes and ther diseases. Being a medical man, it is very strange that he hould leave out three very important disorders in connection with yorrhœa.

Under this system of classification, the omission of the pyor- hœa of menstruation, of diarrhœa, of dyspepsia, of constipation nd of hæmorrhoids seems unjustifiable. Pathology has so long eased to confuse coincidence with cause that the revival of this erious error in the present paper must seem painful to those who elieve that dental science has progressed. It is certainly a reflec- on on Chicago dental science that a paper which will not bear epetition in New York should be read here. The day for dental cissors and paste papers has gone by in the West. We want more riginality.

Dr. AMES: *Mr. President:* I would like to ask whether Dr. albot is discussing Dr. Rhein's paper or Dr. Rhein himself?

Dr. TALBOT: I am coming to the discussion of the paper. he etiology of pyorrhœa, according to Dr. Rhein, is to a certain

extent of local origin; but he also admits that there are constitutional conditions which produce this disease. I agree with him that it is a local disease. Had I known that I was to be called upon to discuss this paper I should have brought photographs showing the development of this disease from start to finish.

In regard to the uric acid theory: To offset the remarks of the paper of Dr. Pierce, of Philadelphia, Dr. Rhein claims that I have tried to show that pyorrhœa is of a neurotic origin. Nowhere have I claimed that this disease is due entirely to a neurotic condition, although nervous diseases have much to do with the formation of pyorrhœa.

Dr. Pierce has made three examinations; I have for the last four years examined 950 teeth. It will be remembered that my report of experiments was published some years ago, since then I have had made over 400 examinations. Of this number six per cent only show uric acid. The last reports show only four or five per cent. On using teeth of gouty and rheumatic individuals, there is an increase of one per cent. It would seem after so many examinations that the uric acid theory must be thrown out altogether. That pyorrhœa starts from the gingival border, there can be no question. For the past four years, the labors of seven laboratories on so-called pyorrhœa have shown that this disease is always located or starts at the gingival border; that it may be due to local or constitutional causes. In every case the disease always starts with a simple gingivitis. This inflammation extends throughout, not running alongside of the peridental membrane as generally understood to-day, but it extends throughout the alveolar process. The inflammatory material may extend down to the outer border into the periosteum, and a nidus and an abscess may form at that locality. It may extend down into the alveolar process, and a nidus of inflammation collect at that locality and an abscess form Or it may extend along down the peridental membrane, and this membrane become infected at that place. This inflammation, therefore, cuts quite a figure in the treatment of the disease. In treatment a remedy must be used which will not only run along down and touch the peridental membrane, but which, when applied to the margins of the gums, will penetrate all the tissues and reduce the inflammation. The inflammation alone produces absorption of the alveolar process. My photographs show four different forms of absorption. When I went to college, I was taught that there

was only one form of absorption of bone, and that was due to lacunar absorption. It is intended by nature that these different forms of absorption should go on, for the reason that the alveolar process is simply a temporary structure and when a tooth is lost, absorption goes on, and if it were not for these different forms of absorption, the alveolar process would not be absorbed so rapidly. It is claimed by Koelliker and others that lacunar absorption is the most important form of absorption. Halisteresis, penetrating canal absorption and osteomalacia are the most common in the absorption of the alveolar process. Absorption of the alveolar process precedes pus formation ; that the absorption of the alveolar process is due entirely to inflammation. I do not wish to go on and give you all my points because I am preparing this work for other purposes.

In regard to the treatment. There are dentists in this country and elsewhere who seem to think that the more they hurt a patient the better it is, and the larger fee they will obtain. Some years ago I called attention to the fact that instruments pushing toward the peridental membrane should not be used for the reason that infection was liable to take place; not only infection, but there is danger of producing pain and of injuring the inflamed tissues. The instruments that are used for removing deposits should draw from the peridental membrane toward the neck of the tooth, and such instruments should be unlike those on the market, or many of them, with broad and sharp edges. They should be round instruments, so as to get into the depressions between the teeth and in the roots and not injure the peridental membrane or the tissues adjacent. There is nothing better for removing such deposits than spoon excavators. These have large blades, so that in removing a deposit one can go half around the root of a tooth without removing the instrument; half way round one side, and then bring it half way around on the other side, and in that way one can remove the deposits without injuring the adjacent tissues. The shanks of the excavators should be bent to suit any purpose. I claim that the constitution has much to do with the treatment; that local treatment, so far as the tissues are concerned, that is, the gum tissue, is sufficient, and it must be kept in mind that the object of treating these tissues is not to carry the drug along the root of the tooth and inside of the alveolar process, but the whole process must be treated. The mere fact of treating the tissues

adjoining the root of a tooth is not sufficient, because the inflammation extends throughout the alveolar process in every case. On this account a drug must be used that will not only reach the periphery of the tissues, but extend down into them, and there is nothing better for this purpose than the tincture of iodine. There is nothing in materia medica that will reach the tissues better than the tincture of iodine. I claim that if every patient were to keep his teeth or his gums in a healthy condition pyorrhœa would not occur. It is the filth, accompanied with the irritation that takes place around the root, that causes inflammation to set in and to extend down into the tissues below.

Dr. JOHN D. PATTERSON, of Kansas City, Mo.: I do not know that I have anything particular to say regarding this paper. With all due deference to Dr. Rhein, who is my friend, and without using any expression which would detract from that friendship, I must say that I am thoroughly in sympathy with the remarks of Dr. Talbot in regard to the etiology of pyorrhœa alveolaris. I cannot conceive that the position taken by Dr. Rhein is the correct one, and I believe Dr. Talbot speaks from the correct standpoint. I believe with Dr. Talbot that pyorrhœa always commences with some lesion at the gingival margin. I have challenged Drs. Pierce, Kirk and others, who claim the opposite, and I challenge Dr. Rhein now, to present to any considerable body of dentists at any clinic cases demonstrating the truth of the assertions made, that on account of constitutional disorder the deposits first appear at the apical portion of the root. They have not so far taken up this challenge. They claim to have seen these deposits upon the apical territory with absolutely no lesions at the gingival border. I have seen cases that have presented at my office by other dentists where they said that such was the case, but on closely looking into the history of the cases I would find that at another time, there was a lesion which had afterward healed, and I think they had made a mistake. The position of Dr. Rhein cannot be substantiated in my opinion by any ratiocination supported by science. I do not believe it for one moment.

I am very much interested in this subject because I have treated a large number of cases of pyorrhœa alveolaris successfully. Dr. Rhein has spoken about the cases where there was absolutely no deposits upon the roots. That I would seriously question. I have seen many cases of these extracted teeth, and in examining

them carefully with a glass I have found deposits which caused the irritation. Of course, every constitutional disease will affect more or less the oral tissues of the mucous membrane wherever inflammation is found. The predisposing causes play a small or great part in the ravages and progress of pyorrhœa alveolaris, but they are never the cause of the disease without a local irritation—never, in my opinion. I have tried earnestly and faithfully in my practice to see in the scores of cases which I treat every year whether there was any evidence to support the theory advanced by Dr. Rhein, but I have not seen it. There is only one thing in addition that I will say, and then I will sit down, and that is with reference to the statement made by Dr. Harlan in his closing remarks, that he believes a specific microörganism is the cause of pyorrhœa alveolaris. I believe the microörganisms in pyorrhœa are the ones which we find in any of the usual inflammations of the mucous membrane of the alimentary canal. They are usually the staphylococci in the various forms and they are quite sufficient to cause all the ravages seen in pyorrhœa alveolaris. But that there is a specific microbe that causes this disease, which, if found and its destroyer found, will eradicate the disease, I do not believe.

Dr. G. V. I. Brown, of Milwaukee, Wis.: I do not know whether I ought to thank the president or not for calling on me to discuss Dr. Rhein's paper, and, while it is a compliment, I feel also some responsibility. It seems to me the discussion is drifting away a little from the main idea of the paper. As I understand it, the chief consideration is not so much whether Dr. Rhein's classifications are strictly and technically correct, as the fact that we have one with us who has dared to make certain classifications and has attempted, at least, to put the discussion of this subject upon a scientific basis. I do not altogether agree with Dr. Rhein any more than the other gentlemen who have spoken, but in the discussion of mere technicalities we lose sight of the essentially valuable portion of the paper. Any effort along this line should be commended. To-morrow I hope in a clinic to demonstrate some ideas I have been working on for some time. I hope to show that one of the most constant etiological factors in pyorrhœa alveolaris is the occlusion of the jaws, what we understand ordinarily by the term malocclusion. Sometimes we have it by reason of deformity of the arch, but far more frequently is malocclusion due to a nervous habit of the patient—one of many which we do not fully

understand, but which are being studied now from a great many standpoints. We may have malocclusion of the arch because of certain surfaces, which, instead of coming directly upon each other and placing the force directly in line with the teeth and roots, come together in such a manner that there is a sliding movement, and this sliding movement is sufficient to move the teeth a little, in one direction or another. You understand the effect of this in regulating teeth, and it is no different in pyorrhœa. When you have a slow forward, backward or lateral movement, then the tissues are forced out of place, and opportunity has been given for infection to enter, which can go on to produce inflammation in the usual manner, and which easily accounts for all the symptoms noted in pyorrhœa alveolaris. I have spent some time with a committee trying to get data from this country and abroad relative to the causes of pyorrhœa, and particularly with regard to its possible relation to tuberculosis and Bright's disease, so-called. Under the general term of Bright's disease we know that a number of diseases of the kidney are enumerated. After a year's hard work with records of cases, so far as we could get them from dentists, we failed to get enough instances in which pyorrhœa was associated with any one of these troubles to make a basis upon which to establish any kind of a claim that such diseases were etiological factors.

Let us take the terms suggested by Dr. Rhein in his paper—pyorrhœa simplex, and pyorrhœa complex. To my mind, pyorrhœa simplex becomes pyorrhœa complex before the enumeration of the various forms of pyorrhœa simplex are finished. Pyorrhœa complex, properly accepted as a term applied to other diseases, would mean pyorrhœa with complications. Dr. Rhein's term is strictly correct, but it does not signify that these complications are etiological factors, it simply means that pyorrhœa is complicated with other troubles, and I do not think any one would undertake to question for a moment the fact that any of the diseases which have been referred to would make pyorrhœa more difficult to cure, or would make its progress more rapid. If that is the meaning of the term, I should say it was correct. If, on the other hand, the term is used to imply that these particular forms of pyorrhœa are the result of certain etiological factors, and that the etiological factors are the particular diseases enumerated, then the structure falls to the ground until that is proven.

Dr. Rhein has referred to Dr. Talbot's work along this line in connection with neurotics, and the cases which he described were almost amusing. I desire to call attention to them, but not with the idea of criticism, because many conditions may sometimes be mistaken for etiological factors. For instance, according to Dr. Rhein's classification pyorrhœa may have some connection with heart trouble. The case described to us was given as a typical one, in that there was fatty degeneration of the heart. Before we can prove that fatty degeneration of the heart had anything to do with pyorrhœa, we must know which preceded the other. As you know, the most common cause for any of those heart troubles which result in loss of vitality through want of compensation with two sides of the heart in its action is some valvular cardiac lesion, or some unusual long continued exercise, and we know that athletes are particularly likely to have enlarged hearts, so much so that it is known as a trouble of that nature. The history of these cases is this: You have an unusual action on the heart for perhaps a considerable number of years, and often as a result of some neurotic tendency it is here that the weak point comes. The result is, that for a considerable time the patient will perhaps take on flesh and seem to be in robust health, but finally the heart does not keep up any longer. There is want of compensation, the muscles of the heart refuse to respond, and we have the commencement of other heart troubles that are recognized, and among which very commonly fatty degeneration may be enumerated. If you do not classify fatty degeneration under that head, then you may have to attribute it to some condition associated with kidney or liver affection, and it carries you to the kidney or elsewhere for the true cause.

In the first case described this evening, the doctor speaks of the deposit extending over the whole surface of the root, which in all probability began to form as the result of the condition long before the patient went to the doctor for treatment. If the facts were known, I believe that would be true. I know that the patient, without seeing him, was one in which there would very likely be nervous action of the jaws which could in all probability have caused the condition of the mouth.

To take up briefly the next case described, the doctor gave us a description of pyorrhœa being due to uterine trouble. I hope to show to-morrow at the clinic that there are different forms of

pyorrhœa and that an opposite result may be produced by the same cause one is recognized as an affection of the peridental membrane, in which there is liquefaction of tissue, the result of inflammation with degeneration, but there is also a form in which we have a reverse condition, so much so that we have an increased bone substance and a tightening of the root in its socket, as I shall show from cases to-morrow. Those cases are commonly associated, not with pyorrhœa, but with neuralgias of the head, and of the face, and various other nervous disorders. The case described was undoubtedly one in which there was likely to be one of these two conditions from nervous action of the jaws by reason of the nervous irritation from the womb disease.

I have under my care at the present time a number of women who have been operated upon for uterine disorders. In every case there is the same tendency to grind the teeth. In most of the cases they have the pain that has been referred to, and I have recently been obliged to put in the mouths of such patients a rubber plate with soft velum rubber extending over the occlusal surfaces of the teeth which they begin to wear a short time before the menstrual period, a time when the most active nervous manifestations are prone to develop and thus try to anticipate and prevent the pain which is expected to come. The case which I shall report to-morrow is one of seven years' periodical pain. It was accompanied with neuritis to such an extent that all over the scalp, along certain portions of the face and the tracks of the nerves the vessels would stand out like whipcords. I speak of this simply to awaken interest in another direction, and to point out that we ought to be slow about giving definite names to things until we have at the back of each name a vast amount of indisputable evidence, because upon this we are judged by the people of the world. It is equally important that some one shall take the lead, as Dr. Rhein has done, and give us something upon which to base a proper nomenclature.

Dr. J. E. NYMAN: Not having any personal acquaintance with Dr. Rhein, I feel that I can discuss this paper with less prejudice than another has done. The doctor deserves great credit for harmonizing our conflicting theories and grouping them together systematically in one paper. I was both surprised and pained by the language Dr. Talbot used in his preliminary remarks, inasmuch as Dr. Rhein in his paper had given Dr. Talbot due credit for his

views, merely remarking that he thought he placed a little too much stress on neurotic conditions in the causation of pyorrhœa. I am at a loss to account for the doctor's attack upon our guest, unless it be that Dr. Talbot has studied degenerate and neurotic conditions so much that for the time being he has become neurotic himself. He has no justification for venting personal animosity in public abuse, especially in view of the fact that Dr. Rhein was our guest. That fact alone should have restrained Dr. Talbot from expressing himself as he did. Believe me Dr. Rhein, Dr. Talbot is not a composite picture of the Chicago Dental Society.

The views held by Dr. Rhein in regard to differentiation and classification of pyorrhœa, according to the systemic derangement found coexistent with it, and which may have been the cause, active or predisposing, and which is always an aggravating factor calling for special systemic treatment in addition to the local treatment of the teeth and gums, and which were expressed by him in a paper four years ago, were referred to and publicly endorsed by me one year later in a paper which I read before the Odontographic Society, and which was published in the DENTAL REVIEW. They seemed to me rational then, and they seem to me rational now.

I have two clinical cases to report, the first of which may be classified, according to Dr. Rhein, as one of tubercular pyorrhœa; while the second case may be classed as one of apical pyorrhœa, —that is, a pyorrhœal condition near the apex of the root due to calcific deposits without deposits or pathological conditions at the gingival border of the gum.

The first case was that of a young man, twenty-eight years of age, single, of Swedish nationality, who applied to me for treatment for inflamed gums and loose teeth. He had pyorrhœa, that was evident, without very much calcific deposit. In general appearance he was what is termed scrofulous. He had scars on one side of his neck where some cervical glands had been removed on account of tubercular casefication. For six months I treated him carefully and patiently with but little success. He ceased his visits for a period, when one morning I was sent for to come and see him at his home, and found him suffering from intense pain in the region of the right hip, and at once made up my mind that the case was not within my field of practice. Accordingly, I called in a physician, who confirmed my suspicions when he diagnosed the case as tubercular osteomyelitis of the right femur. The cervical

glands on the opposite side of the neck from that which was scarred were found swollen and casefied. He was operated on, put on anti-tubercular treatment, went to New Mexico, and remained there for about a year. While there he consulted a dentist, who treated his gums. When he returned to Chicago there was no evidence of peridental inflammation of any character.

The second case was as follows: A gentleman applied at my office one morning complaining of severe pain in the region of the right superior central with a great deal of tenderness of that tooth. He did not have any symptoms sufficiently distinct for me to make up my mind positively as to what the trouble was. He had "taken cold," as he said, and there was an inflamed condition of the gum tissue over the right superior central some distance above the gingival border, accompanied by great tenderness of the tooth. Thermal tests gave negative results. I applied a counterirritant. This was on Saturday, and I did not see him again until Monday, when he came back with a swelling over the central incisor. As far as could be determined, it contained pus; I opened it, and there was a flow of pus. Repeated thermal tests again gave negative results; and I explained to him carefully that the nerve in that tooth was dead, the nerve canal was filled with putrescent organic matter, and that it must be opened, cleaned out, and the root canals filled or it never would heal. The tooth was very sore. I tied a ligature around it, made tension on the ligature while I drilled into the tooth. He gave evidence of severe pain while I was doing this. I thought the sensations of pain arose from the tenderness of the tooth, so I drilled away; finally, the drill "struck home," and he jumped and yelled like a madman. Withdrawal of the drill was followed with a flow of blood. I had made a mistake and drilled into a live nerve. Then I thought the adjoining tooth must be the one at fault. Thermal tests again gave negative results, and I persuaded him to let me drill into that; but I found out it was a live tooth by the time I got through the enamel. The alveolar abscess disappeared after I lanced it. I devitalized the pulp I had drilled into and filled the root canal. I do not know the subsequent history of the case; he was so much incensed at me that he never came back. However, in thinking it over, I believe there was probably a formation of calcific deposit near the apex of the tooth.

Dr. PATTERSON: I would like to ask the doctor as to the

cause of the pyorrhœa which seems to have developed at the apex of the tooth.

Dr. NYMAN: While it has often struck me in thinking over the second case that it was a fine demonstration of this theory of apical pyorrhœa, I cannot state the exact cause of it, for I had no opportunity of making the usual examinations for systemic derangements. I was personally acquainted with the gentleman, and I know that he was both gouty and rheumatic.

Dr. PATTERSON: How did the cure come?

Dr. NYMAN: I am not able to speak of the case as definitely as I would like to, for the case was not under my observation long after I opened the pus pocket. I learned later that there was no further discharge of pus.

I think we are a little bit too radical in our views as to whether or not pyorrhœal conditions are due to uric acid derangements. There are many systemic derangements, particularly the gouty, oftentimes unaccompanied by distinctive symptoms, and if endeavoring to cure we give medicine which we know is a specific for gout and the deranged condition disappears under that treatment, we are safe in concluding that it was an obscure case of gout, although there were no distinct symptoms to clearly indicate it.

In regard to the remarks of Dr. Talbot, in which he sarcastically suggests that we proceed to classify pneumonia as diabetic pneumonia, etc., I beg to call his attention to the fact that his analogy is a poor one, because the medical profession as a whole accepts as true the theory that pneumonia is due to a specific infection, while at present this is not believed to be the case with pyorrhœa; at the same time, a diabetic condition is certainly one which would predispose a person to an attack of pneumonia or any other infectious disease. But we have analogous classifications in medicine. Take peritonitis, for instance, it may arise from appendicitis, infection of the uterus, impaction of fæces in the intestinal canal, so that there is retention and accumulation of toxins which penetrate the wall of the intestines and infect the peritoneum; or we may have an inflammation arising by progression of the inflamed condition of the intestines, as in typhoid fever.

I think Dr. Rhein's paper is one with which few men can really find any serious fault. He has taken all the different theories on pyorrhœa and has harmonized them. Personally, I wish to thank him for giving us the best paper I have ever read or listened to upon this subject.

Dr. C. R. Taylor, of Streator, Ill.: I thought Dr. Harlan in his closing remarks was going to say that the primary cause of pyorrhœa alveolaris was from a weakened condition of the peridental membrane in consequence of a functional degeneration of the organs of mastication. In discussing this question we are trying to specialize instead of generalizing as to the fundamental principles that underlie pyorrhœa alveolaris. If it is true that the peridental membrane is in a weakened condition in consequence of the lack of the use of the jaws and teeth, then we have a membrane which is susceptible to local and systemic irritations, and these irritations will manifest themselves because of this weakened condition of the peridental membranes. I wish the men who are trying to specialize would try to find out what the fundamental principles are, or the primary cause of pyorrhœa alveolaris.

I live in a section of the country where I have a good many foreign people as patients—Slavs; men who have massive jaws, massive teeth, and when they came to this country from the land where they bake their bread once in three months, and then stack it up like cordwood, and need a hammer to break it in pieces in order to chew it, they are nearly free from the ordinary diseases that we have, under the conditions in which we live. But as soon as they came to this country and commenced to eat sloppy foods and ceased to use their organs of mastication, all the diseases we have, and are so prolific in our native people and the civilized people of Europe, are seen in the aggravated form both as regards decay and in diseases of the peridental membrane. Doubtless many of you have seen the skulls of some of the semisavages or barbarians, such as Dr. Whitney, of the Sandwich Islands, showed during the Columbian Dental Congress, and he told us that he found evidences in a minute form of all the diseases we now have. Now then just in proportion as people pass away from the thorough use of their jaws and teeth into civilized life, these diseases become more pronounced, and we have them in the aggravated forms of to-day. It is said that the great man, Girard, of Philadelphia, always kept a box of ship crackers—hard-tack—to use when he found that he did not give his teeth sufficient work to do. He said his teeth were like idle men, when they had nothing to do they fell into loose ways. Here is a layman who has given us the fundamental principle involved in the disease which we call pyorrhœa alveolaris.

Dr. CHARLES L. HUNGERFORD, of Kansas City, Mo.: So much has been said in the way of criticism of Dr. Rhein's paper, that I wish to raise my voice in admiration of one idea at least, and that is with reference to the destruction of the pulps of teeth. I would like to shake hands with him on that because he is from New York, for the New York men that I have met in the past arose as one man against the destruction of the pulp of any tooth, no matter how much discomfort it was causing. I wish to second the idea, also, that it will result in the greater determination of blood to the peridental membrane upon which the life and vitality of the tooth depends; that the pulp of a tooth is of no more value to the physiological relationship of the tooth with the jaw than is the membrane which is calcified or absorbed in the process of the formation of the enamel.

I want to endorse the remarks of Drs. Patterson, Talbot and Harlan with reference to pyorrhœa being due to a local cause. I would like to take issue with Dr. Rhein when he said he believed it was due to the introduction of bridge work. If you bore a hole in a man's economy you have made a traumatism, and any kind of a hole, so long as the foreign agent is in position, will keep up the source of irritation. It is only by eradicating this that you can expect nature to come to the rescue. You cannot produce reproduction of tissue; you cannot change this thing except by removing the cause and letting nature do her work.

I would like to ask Dr. Rhein his authority for the idea that albuminous or nitrogenized substances are the cause in their absorption or disintegration of uric acid? Personally, I have been taught that in the destructive process there were formed urates which are soluble and pass off with the urine. If uric acid is the direct result of the process he described, every man has uric acid stored up in large quantities in his body, and should of necessity be subject to pyorrhœa.

Dr. KEEFE: Dr. Hungerford stated in his remarks that to successfully cure a case of pyorrhœa it is necessary to remove all deposit from the root of the tooth so affected. This we all admit, but who of us before attempting this operation can assert with positive assurance that every particle of deposit will be successfully removed from the root of the affected tooth?

There is just one way in which I can do this conscientiously, and that is by removing the tooth, scooping the root, filling the

root canal and replanting the tooth. I am referring now to cases in which the teeth have become loose and the gum tissue has receded from the necks of the teeth. I have a typical case for my clinic to-morrow which I should like to have you see. I intend to remove the lower right first and second bicuspid teeth, which have been under treatment for some time.

In preparing for an operation of this kind it is necessary to have every instrument to be used thoroughly sterilized and the hands aseptic. When the tooth or teeth are extracted, they should be placed in a saline solution (seven and one-half grains of salt to a quart of distilled water which should be kept at a temperature of 90° F.) one of the teeth should then be put into a hand vice, made specially for the purpose, and the root or roots cleansed by scraping. These teeth, which I shall remove to-morrow, if alive and free from crown cavities, I shall simply seal at the ends of the roots with any one of the well-known root filling materials that will hermetically seal them; but in treating the anterior teeth I always remove the pulp, as it takes only a few minutes' more time. Before replanting a tooth or teeth, I always bathe in oil of cloves for about five minutes, and I rarely interfere with the sockets, except to syringe with the saline solution. Upon returning the teeth to the sockets I slip the rubber over them and the adjoining teeth, and then cement my bands, which extend to some of the sound teeth, in order to hold the loose ones firmly in place. These bands, by the way, are made from impressions taken before the teeth are extracted, and also tried on the teeth before extracted, so that I may feel sure that they will fit when the teeth are replaced. They should never extend more than half way down the crowns.

Now, gentlemen, when I have completed an operation of this kind, I feel satisfied that I have cured the pyorrhœa. I know that by extracting a tooth I have removed the dead particles of process from the living, which are washed away by the flow of blood or the syringing, and when the tooth is replanted I get a healthy granulation.

This, of course, is a theory based upon facts proven by other operations, and I hope within a year to be able to prove or disprove any statement made in connection with this subject. Four months ago I replanted healthy teeth in two dogs. One of the animals got away but I still have the other. Next week I shall replant in dogs having pyorrhœa, several teeth, and continue these

experiments until I can show just what takes place when these teeth are replanted. Strange to say I have not seen any absorption on the roots of these pyorrhœa teeth after four years, such as I have seen when healthy teeth were replanted. This may have been simply a coincidence, but it is certainly encouraging.

Dr. Rhein presented a method for securing loose teeth, by first cutting a groove in the grinding surfaces of the teeth, then shaping a platinum bar to fit into these grooves, holding it there by inserting a gold filling around it. The idea strikes me as being a good one, but I do not see how he is going to get the gold filling into loose and sore teeth without a vigorous protest from patients. I should suggest cementing those bars in place.

Dr. Rhein (closing the discussion): *Mr. President and Gentlemen:* I have taken few a notes of the discussion that has taken place, and the only question is whether I should take the time this evening to reply to everything that has been said in antagonism of my views, or whether it would not perhaps be better to write another paper in answer to the various criticisms. I want to thank Drs. Nyman, Hungerford and Brown for coming to my rescue, and if I am proud of anything, it is to get support in this matter from young men. It is especially in the young blood that we must endeavor to infuse a rational way of looking at certain scientific points.

While listening to some of the remarks of Drs. Harlan and Patterson, I was afraid that I had failed to make myself clear in the paper, or perhaps they failed to follow it as carefully as they should, as it is frequently impossible to get the substance of a paper when hearing it read.

First, let me say that I do not care to hide behind any bush, and, therefore, disclaim any idea of accepting Dr. Harlan's compromise that when I refer to a certain disease being the cause of the local symptoms I mean that constitutional trouble is merely concomitant with the form of pyorrhœa. I have come all the way from New York to present a paper which is absolutely new, and has never been read before to any society. In that paper are a few quotations from other papers that I have read, but everything that I have read or said at any other meetings which I have repeated to-night is distinctly indicated in my paper, and I do not believe they embrace fifteen or twenty lines of the present paper. I am somewhat surprised that any such criticism should be made

by Dr. Talbot—one which is so palpably untruthful. I am happily not in the position of being paradoxical. I have taken the position, which I have endeavored this evening to further elucidate, as far back as 1888, and I want to say that when I took that position I was sustained by the earnest and sincere counsel of one of the greatest dentists that ever existed in the United States, and that was the late Dr. Atkinson (applause), and there is no encouragement I ever received in furthering the work which I had done in this particular line which has been so great as that which Dr. Atkinson gave to me in those early years; and the one thing that impressed me very deeply was this: Dr. Atkinson said, "Do not try to make your theory fit what you find out, but stick to the truthfulness of every observation that you make." And, gentlemen, that has been my endeavor in this work. In the course of the last fifteen years of daily observation of this particular trouble I have not seen a single fact that has led me away from the idea advanced at that time, and this belief has clung up to the present, because every observation has tended to fasten it more firmly in my mind. I occupy a different position in that respect from Dr. Talbot because I requested your president to ask him to discuss this paper for the reason that in reading the various articles he has written on this subject, they have seemed paradoxical to me, as his remarks this evening have seemed paradoxical to me. I stated that I suppose he attributed all troubles to a neurotic origin. In reading his papers carefully that idea was impressed upon me, and yet I find running through them a train of thought and deduction entirely at variance with this neurotic origin in which he attributes every case to a purely local origin; and while my ideas may be incomprehensible to him, I must say that his are entirely incomprehensible to me. It was for that reason that I wished to hear his views this evening and they are less comprehensible now than they were before. I want to say in regard to the point Dr. Harlan made as to whether the trouble was concomitant with pyorrhœa, that pyorrhœa is not necessarily always accompanied by a flow of pus from the alveolar socket. It is only at a certain stage of the trouble that we get pus; but there are stages leading up to it, and there are also forms of it where the pus will pour out more easily and earlier than in other varieties. The point I wanted to bring out was that the condition of the tissues around the root varies, whe

there is a deficiency in the nutritional elements. Malnutrition, however, does not necessarily mean a deficiency in nutritional elements. Can we deny the fact that the ultimate points of the circulation are the ones that are first affected by malnutrition, and that if they are not nourished properly, they cannot remain in a healthy condition? That is one of the first laws of physiology, and it is universally understood that no part of the body can remain stationary; that there is a continual wear which necessitates repair, and if the material is not there to make the repair, there is sure to be trouble, and we call this necrosis. Death of tissue ensues. That is what takes place in pyorrhœa alveolaris. We have an impairment in nutritional supply. This impairment is an irritant sufficient to cause inflammatory conditions irrespective of any local irritation, and that is what I mean when I say that irritation is the commencement of the symptoms in all forms, without necessarily a perceptible local irritant. But any impairment in nutrition is an irritation that will produce an inflammatory condition. In contradistinction to what Dr. Talbot has said in regard to my classification, I will say that Dr. W. D. Miller, of Berlin, speaks of it in the same manner in what he has to say on pyorrhœa alveolaris. It has been my endeavor to follow up, as far as lies in my humble power, a scientific classification such as dermatologists have adopted in various forms of trouble, and such as other specialists have adopted where the local conditions are results of symptoms which we unfortunately have been accustomed to look upon as the cause and not as merely the symptoms. The observation that I have made, and have made repeatedly, is that in a patient with a tuberculous pyorrhœa the condition of the gums or of the peridental membrane suffering from the results of that nutritional disturbance is entirely different to a careful observer from what we find in a patient suffering with Bright's disease. I spoke about the difference in pregnancy. I have seen women present themselves in a pregnant condition where there was not sufficient nutriment being assimilated for mother and child, and I have seen it result in a local irritation of the parts producing an inflammatory condition which is most unique in its clinical appearance, being different from anything I have ever seen. Now, I trust I have made myself clearer on this point.

Dr. Talbot asks why I did not speak of pyorrhœa of constipation and of pyorrhœa of diarrhœa, and some of you thought that

very funny. I did speak of cases of pyorrhœa of constipation in the classification which I gave, although I distinctly stated that it was impossible to give a complete classification. I have not had the time nor the money to open seven laboratories. I am forced to earn my living and to support my family by means of professional labor, and what little spare time I have had I have devoted, as far as possible, toward the elucidation of some of these problems that confront us.

I mentioned a case of intestinal toxæmia, which I called toxic pyorrhœa, because in those cases we have the absorption of toxins from fæces that are retained in the lower intestine. Generally speaking, we may well call that a case of constipated pyorrhœa, because constipation enters largely into the primary cause of such troubles, and I have found the treatment of constipation in pyorrhœa of very great value in a great many forms of the trouble.

Dr. Patterson stated that he doubted whether I had ever seen any cases where the deposits had started without a gingival lesion. This statement has been made before. He and others have challenged me to produce such cases, and when they have been produced the statement has always been made, "How do we know there has not been a lesion which was present at some time and which had healed?" It is too difficult a problem to prove in the way in which Dr. Patterson would like this matter proved. It is almost impossible, and he knows it. It is one of those Chinese puzzles he presents to me to solve. I wish to ask Dr. Patterson: How do we know that every pyorrhœal pocket that has a gingival opening has not been formed by the pressure of the pus down the side of the root, and that this was not the location of the initial lesion? Prove that to me. All I can say in refutation of his declaration is that I have seen many cases that prove to me that there were no initial lesions, and I have been supported in this by similar observations made by good men. In these cases the pockets were formed from serumal deposits either at the apex itself or very close to the apex, where the starting points of the inflammation arose. I do not know whether he also doubts the fact of there being any such thing as a condition of pyorrhœa without a deposit of any kind. Of course, when a man disputes a fact stated by another man, it is a question either of the veracity of the other man or of his competency as an observer. When I say deposit, I mean something that is firm and attached

o the root itself. I do not mean any soft, serous accumulation, or heesy-like matter that may be due to the liquefaction of tissue. I ave extracted many teeth where pyorrhœa was the cause of the oss of the teeth and found no deposit upon the roots of those eeth, and in cases where no efforts had been made ever to remove ny deposits.

I feel sorry that Dr. Brown did not have an opportunity of eading the paper before discussing it. He fell into an error, due o a misinterpretation of what I read. I never said anything about case of fatty disease of the heart. I never cited a case of that ind. It is true, I spoke about fatty degeneration around the eart. The pericardium is not the heart. There was no lesion of he heart in the particular case I cited. The fact that the patient as cured ought to have convinced him that it could not have been case of disease of the heart. I called it, according to the clas- ification that I have been endeavoring to elucidate, a case of iparous pyorrhœa, because there was unquestionably an undue mount of fat in the blood of that patient. I gave it that name as prefix in preference to saying pyorrhœa due to fatty degeneration bout the pericardium. We all know that fatty degeneration about he pericardium is a disease which, if left alone, becomes fatal in short time, but nevertheless, vigorous, timely treatment has ured many such cases. I cited this case as one of many to illus- rate the truthfulness of the groundwork for the claim I make for a lassification based on the predisposing cause. Here was a woman hose case has never left my mind because it had one remarkable eature. I never saw thirty-two more perfect teeth that met in a ore perfect manner than these, and they were in the most cleanly ondition. They were marvelously clean. Those were the two oints that impressed themselves on me, and the woman was one f those women who take the most scrupulous care of their gen- ral health, followed the laws of hygiene, and took the same care f the mouth that she did of the rest of her person. There were o tangible deposits that could be detected with the finest examin- ng instruments about the roots of the teeth, but there were pock- ts extending three-quarters the distance up the ends of the roots. could press the serous exudations from the gingival border, and ocal treatment would not cure the trouble, although it alleviated nd improved it. After she had been treated abroad and pro- ounced cured by a physician, I saw her again and there was per-

fect readjustment of the gingival tissues. There were no pockets of any kind, and to my mind it is an evidence of cure of a case of pyorrhœa complex by curing or removing the cause of the trouble. It is also a case to my mind of pyorrhœa where there were no deposits upon the roots of the teeth, and consequently there could have been no local irritant such as the gentlemen have spoken of as local irritants, although I claim the excess of fat in the blood was in itself a local irritant that produced an inflammatory condition which was present when I first saw her.

I want to give one other illustration of the influence that the disease produces upon this condition when it is not held in check. It has been my experience within the last two months to treat some patients who were suffering from what I call diabetic pyorrhœa. These patients had been under my care for years. The local treatment which I found was formerly most efficacious in improving the condition failed; instead of finding the patient coming back with the condition improved, I found the most intense state of irritation set up. On careful inquiry I found the patient had dropped her usual diet and was simply under the most baneful effect of diabetic conditions; and local treatment, instead of alleviating the trouble, only aggravated the inflammation.

I was very much pleased with what Dr. Hungerford said about the removal of pulps, and I agree thoroughly with him. He seemed also to not quite catch what I said about uric acid. Uric acid in the form of quadriurates are unquestionably found to be normal constituents in the blood of every person, and the question is merely the excess of these quadriurates. In this same direction Dr. Talbot placed so much stress upon the fact that we claim to find quadriurates on the roots of teeth. He asks "Why is it, if we find them on the roots of teeth of so many patients who have gout and an excessive amount of uric acid, we do not obtain the uric acid excess in our urinal examination and vice versa?" This is one of the points I tried to elucidate. Where there is an excessive quantity of uric acid formed, and the kidneys themselves are not diseased, the uric acid is eliminated to a very great extent, and it is only at times that the patient suffers symptoms of gout. Those are the cases where we would not expect uric acid deposit on the roots. In the other class of cases where the kidneys are incapable of carrying off the uric acid, it does not show in the urine but is retained in the system.

In such cases it is not any more strange that these urates should deposit on the roots of the teeth than upon any other places where tophi are found.

I have not begun to exhaust the questions that have been given me by some of the gentlemen, but I cannot proceed any further on account of lack of time. I am not adverse to the hardest or severest kind of criticism. It is only criticism that will bring out truth, and there is not a man in this room who is more ready to change any idea than myself, if it can be demonstrated to me that the facts are different from what I have presented, and the thing I wish to emphasize is, that as far as I am personally concerned, what I have said has been said with the strictest observance for truthfulness, and if I have been incorrect, it has been due to my own incompetency to appreciate what I see.

Dr. BROWN: *Mr. President:* I would like to ask the privilege of a word or two in regard to Dr. Rhein's reference to myself.

In the first place it is my desire to emphasize the fact that I intended to speak in a complimentary manner of the essay, and of the essayist's opinions, not at all with a spirit of antagonism. Upon that point I desire to be especially clear. As to the trip around the block which he has kindly suggested, would say that I will wait a little until the doctor has had time to look up the pathology of the disease to which he referred, and then I know I will have company around the block; it will be good company and will enjoy the trip accordingly.

DISCUSSION ON DR. DE FORD'S PAPER. SEE PAGE 259.

Dr. THOMAS L. GILMER: *Mr. President:* Not having supposed that I should be called upon to open the discussion on this paper, made no preparation. I have been greatly interested in listening to the report of the case, and so far as my knowledge goes, it is, clinically and otherwise unique. I would like to ask Dr. De Ford if the tongue has become normal in its size.

Dr. DE FORD: The left side of the tongue recovered perfectly, there being no indication of any inflammatory condition present except a little scar tissue from the healing of the ulcer.

Dr. GILMER (resuming): A few cases of glossitis have come under my observation, but with one exception they were mild ones. I have frequently seen irritation of the tongue caused by sharp edges on the teeth. The serious case of glossitis that I referred to was caused by traumatism. The teeth of the patient were worn

down very much and had sharp, angular edges. He received a blow on the chin which suddenly closed the jaws catching the tongue between the teeth, wounding it severely. The tongue became greatly swollen, so much so that we feared it would be necessary to perform tracheotomy in order that the man might continue breathing. In this particular case we drew the tongue from the mouth, made incisions underneath it on both sides and encouraged a free exit of blood from the part by applying warm water, and then applied ice, also antiseptic and astringent solutions. In a short time the tongue was reduced to its normal size. Such cases as the one Dr. De Ford has reported show how dangerous sharp edges on teeth may be, and teaches us how necessary it is that we be careful in our examinations for such conditions in the mouth. Sometimes a cusp that has become worn down may cause an ulcer on the tongue resulting in serious trouble, possibly in a malignant growth. The irritation in this particular case which was the cause of the trouble, doubtless had continued for a long time before the patient recognized it, and an ulceration of the tongue was the result. Undoubtedly the pus pockets remote from the initial lesion were metastatic, that is, the lymph and blood channels had carried the infection from the point of primary infection to other parts of the tongue and there were set up other foci of infection. I should account for the enlargement on the opposite side of the tongue in the same way. Now that the cause has been found and removed, the tongue will doubtless resume its normal condition.

I suppose the object in giving iodide of potassium was for diagnostic purposes.

Dr. De Ford: While the patient did not give a history of syphilis, I thought the iodide of potassium would not be out of place, and might cause absorption of the inflammatory product

Dr. Gilmer: From the history of the case I should not suspect that this was a syphilitic ulcer. Syphilitic ulcers are not of this kind. The pockets of a syphilitic ulcer are not so deep, and they have well defined margins, with floor covered with a pasty brownish kind of secretion.

The case is exceedingly interesting, but there is not much to discuss about it. The doctor has given us the facts in the case and it ought to be a warning to us to be careful to examine thoroughly the teeth of every patient that comes to us for sharp edges and if found polish them off round.

Dr. GEORGE W. COOK: I have been much interested in this paper, and I think it is one which emphasizes the importance of our paying more attention to the tongue and to the condition of the teeth. I have been making some observations in pathological conditions of the mouth, and the tongue has attracted my attention quite considerably. I have seen two or three cases of tuberculosis of the tongue and one case of actinomycosis of this organ. Mikulicz and Kümmel, in their "Atlas of Pathological Conditions of the Mouth," have described thirteen cases of actinomycosis of the tongue out of 186 cases of glossitis. I am inclined to think that the doctor's case was one of antinomycosis from the description he has given of it, as well as from the description given by authorities on the subject. As is well known, the iodide of potassium treatment has been used for the disease both in the bovine and in man for this condition. The discharge from the tongue that he describes shows some likeness to that which I have seen in many cases, and I have no doubt the treatment by iodide of potassium assisted materially in the recovery of the patient. I would like to ask the doctor if he noticed a granular substance in the discharge at any time?

Dr. DE FORD: Not very much. The discharge was so mingled with the food that it was hard to tell what was food and what was discharge. It was difficult to distinguish between the two.

Dr. COOK: In the discharge from a case of actinomycosis there is a yellow granular substance in which the ray fungus appears, and I think a case of this kind should not be diagnosed without a thorough microscopical examination. In fact, I hardly think any one could determine accurately the diagnosis without a microscopical examination of the discharge. The writers I have mentioned speak of scleroderma. In one case the initial lesion was found in the posterior part of the tongue, and the description that the doctor has given of his case is somewhat in line with the description that they speak of. This disease attacks the tongue, and more particularly the mucous membrane of the mouth, before the tongue is in any way involved. But they reported one case in which the disease attacked the posterior part of the tongue, the ulcers not being so deeply situated under the tongue as the doctor has spoken of.

Dr. C. E. BENTLEY: I should like to ask Dr. Cook if actino-

mycosis will attack the soft parts of the mouth without attacking the jaw.

Dr. Cook: It will attack any part. To give the authorities upon this subject would take some time, and I will merely say that there has been a good deal of dispute in regard to the use of iodide of potassium. Actinomycosis has been demonstrated in all parts of the body. Dr. J. B. Murphy, of this city, has reported two cases of actinomycosis which involved the peritoneum. Personally, I have seen a case of actinomycosis of the testicle, and it was not demonstrated in any other part of the body. I saw a case of actinomycosis involving the abdominal wall just over the symphysis pubis, in which there was a small nodular appearance. The individual had been hurt some two or three months before by a fall; a sinus had formed, and on scraping it out and making a microscopical examination of the scrapings it proved to be a true case of actinomycosis.

Dr. C. E. Bentley: I would like to ask the essayist what was the dose of iodide of potassium given to this patient, three times a day.

Dr. De Ford: Five grains to start with, and not over ten. We gave him iodide of potassium because we did not know what else to give.

Dr. Bentley: It appears to me that this is a case of glossitis in which the sharp edges of the teeth were the exciting cause. Inasmuch as an examination of the contents or the material from the ulcer has not been made microscopically, and the granular substance spoken of by Dr. Cook has not been found, I think we may safely exclude actinomycosis. Iodide of potassium, administered in such small doses, would not radically modify any syphilitic lesion in such a short time. It is safe to conclude that both actinomycosis and syphilis can be excluded. As I have previously remarked, the case appears to me to have been one excited by the sharp edges of the teeth cutting into the membrane and permitting the various pathogenic microörganisms of the mouth to gain access to the opening, forming crypts, and having an opportunity to propagate their kind and to burrow into the tissues, thus making the immense cavities described. The lesson to be learned from the recital of this case is that we should carefully examine the teeth of our patients to the effect that all sharp edges of teeth should be smoothed off.

Another point we can profitably speak of is to instruct the physicians with whom we come in contact that one of the essential and primary things necessary in the treatment of syphilis is that the teeth should be especially clean and all rough edges should be removed before patients are put under extensive mercurial or iodide of potassium treatment. Knowing as we do that mercury has a special affinity for the peridental membrane, and particularly an affinity for the mucous membrane of the mouth, and knowing that these remedies would only aggravate the case, it should be our duty to impress physicians with the necessity of having the rough edges of teeth removed before any treatment is undertaken.

I have been very much interested in this case of glossitis. I believe that it is neither syphilitic nor actinomycotic.

Dr. W. F. GREEN, of Evanston, Ill. : I am not prepared to discuss the etiology of this case, as I think it concerns us very little. What we as general practitioners wish to know, when a case like this presents itself, is what to do. About a year and a half ago a case presented itself to me, it being that of a large, vigorous, Swedish man, who consulted me about a tooth from which he had broken a small piece in trying to crack a nut. While he was in the chair, I noticed on the right side of the lower jaw some inflammation above and on the lingual side of the third molar. The tooth for lack of room was only about half erupted. I observed in the articulation, when he closed his jaws, that the distal third of the superior third molar antagonized the part of the gum that covered the lower third molar. I asked him if it troubled him, and he said it did, and he had noticed that there was a little tenderness there now. This he said would be followed by a sore throat and loss of voice, which ran the regular course of an ordinary attack of laryngitis and disappeared. I lifted up the portion of the gum on the top of the tooth and found underneath that the tooth was bathed with pus. I recommended its extraction. It was not done immediately, and three days later he came to consult me again to see if I would take the tooth out. The inflammation had then extended to the right tonsil and the larynx. The base of the tongue was inflamed and swollen, the inflammation extending almost three-quarters of its length. He said he was having one of his regular attacks of sore throat. I sent the man to Dr. Slonaker, who extracted the tooth. In about three weeks from that time an attack exactly similar commenced on the other side; this

time the inflammation was more marked all around the third molar, with the same condition of the gum as on the right side. The inflammation this time extended until it involved about half of the tongue antero-posteriorly, the tonsils, the pillars of the throat, and the larynx as before. After the inflammation had subsided somewhat he had this tooth extracted also, since which time he has had no return of the attacks of tonsilitis or laryngitis.

A short time ago a lady patient of mine sent for me to come to her residence to extract a root which had been crowned some years previously, and the crown had come off. I found that the root was one that had been badly broken down and the fangs separated and were fastened together by a staple anchored in with amalgam. She was then about four months advanced in pregnancy. I wanted her to have Dr. Slonaker come to the house and extract the root. She said no, she preferred to have me take it out because she did not want to take an anæsthetic under the existing conditions. I accordingly extracted both roots. On each fang was a blind abscess. She got along all right, passed through her confinement, nursed one of her children through a severe attack of pneumonia, and another one through a severe attack of la grippe, with the result she was completely used up. She was exceedingly nervous when she came to my office in her carriage one day and said she had neglected to have the right superior third molar extracted, as I had recommended her to have done a year previous It was now troubling her. I removed this third molar, which had a large cavity on the buccal side. At the time there was no apparent irritation of the mucous membrane of the cheek or anywhere else. She made an appointment with me for the next week to have some other work done, and two days previous to the appointment her mother telephoned that she was confined to her bed with inflammation of the tongue and she wanted me to come down and see her. I called and found a general inflammation of the tongue of the mucous membrane of the lips, cheeks, and also of the gum tissue. Temperature was 102.5°. I recommended her to call in the family physician, which they did immediately, and neither he nor I could see any indications of initial infection at the point of extraction. The condition was the same in all parts of the mouth. The lady is not yet entirely well, but the inflammation and swelling of the tongue have largely subsided, although there is a little stiffness of that organ. There was no suppuration. Her tempera

ure is normal now. I hope to report the particulars of the case some time in the future, giving the treatment, temperature, etc.

Dr. De Ford (closing the discussion): I wish to thank the members of the Chicago Dental Society for the courtesy extended to me in reading this paper, and knowing that the meeting would be held at one of the colleges, and that many students would be here, I thought it would be a good thing to present this case of glossitis with a view to emphasizing the importance of keeping the teeth in a perfectly physiological condition. That was my principal object in presenting the paper at this time.

TEETHING.

The eruption of the teeth is a physiologic and anatomic crisis.—White.

Diarrhœa of teething is natural.—Ellis.

The fact that this diarrhœic tendency lessens during the second and third year is in no way related to dentition, but due to the protective condition of the canal, which the development of the various secretions gives it. Free hydrochloric acid is known to be destructive to fungi up to a certain point; this, of course, the infant stomach has not. Since fermentation is in no way arrested, yeast fungi are found in large quantities in infant diarrhœa. And if physicians who attach importance to the theory of teething were to examine the food served to their diarrhœic patients, they would in numerous instances find it contaminated.—Dr. Frank H. Babcock, *Virginia Medical Semi-Monthly*, October.

Among the most common pathologic results of difficult dentition are certain affections referable to the cerebro-spinal system, eclampsia being one of the admitted results.—Smith.

When similar symptoms arise at each epoch of teething, and subside with the subsidence of the gingival turgescence, teething must be regarded as the cause.—Smith.

The evolution of the teeth is one of a number of developmental processes going on in the body, and organs and tissues are prone to disease in proportion to their normal or physiologic activity.—Carmichael.

Convulsions in teething arise from nervous excitement, from the pain and general disturbance.—Bouchut.

In teething the child is passing its first climacteric.—Love.

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WAR AGAINST DIPLOMA MILLS.

The stand taken by the committee of the National Association of Dental Faculties against bogus diplomas in dentistry receives the encouragement and hearty support of all right thinking persons in this country. Let it go on until every bogus diploma factory is driven out of business. The courts in Chicago have decided against the Independent Medical College, in this city, which will cut off one of the "fake" diploma mills. When a few more charters are annulled we will be free of this sort of stench against public morality.

INTERNATIONAL DENTAL CONGRESS.

We have received an advance copy of the rules and regulations of the congress, which, when published, will show conclusively what the status of the congress is to be. It will be an official congress, under the patronage of the French government and will surpass all previous efforts that have been made in Europe, both in the number present and in the rarity and richnes of the programme.

ILLINOIS STATE DENTAL SOCIETY.

Elsewhere we print a full programme of the next meetin which will be held in Chicago. The society has not held a meet ing in this city since 1872, so that we can count upon many ne members. The meeting will be held beginning Tuesday, May and continue four days. All dentists are invited to be present.

National Dental Association.

The National Dental Association will convene in Niagara Falls the first Tuesday in August next, with Dr. H. J. Burkhart presiding. This meeting will undoubtedly be interesting, as the president is energetic and is doing all things possible to have good reports from the sections. There will be a president's address and then we are to have two general addresses from prominent dentists. Every section ought to know about what will be presented by July 1, so that any one desiring to attend may know what the programme will consist of and whether it will pay for the effort, time, and money to attend.

George Watt.

In these days of rapid thinking and rapid living it is good once in a while to turn back to look at the career of one of our fellows in the upbuilding of a profession. The other day a bust of Dr. Geo. Watt was unveiled in the rooms of the Ohio College of Dental Surgery, at Cincinnati, in the presence of many of the alumni of the college. Dr. Watt was a conspicuous member of the profession for many years as a teacher, writer and editor. We think he entered the profession about 1853, and was associated with J. Taft as co-editor of the *Dental Register* and professor of chemistry in the Ohio College, and later was the editor, until his death, of the *Ohio Dental Journal.* His chemical essays were published in book form about thirty years ago, and for many years were much quoted as the best authority on the chemistry of caries in the English language. His whole life was devoted to the betterment and uplifting of the practice of dentistry. During his lifetime he filled many offices of prominence, being president of the American Dental Association, the Mississippi Valley Association of Dental Surgeons, the Ohio State Dental Society, and others that we do not recall. It is a graceful act to erect a memorial to the memory of one who did so much for the college and still more for the students who thronged his lecture room during so many years. The founder of the college, Dr. James Taylor, was so honored in 1897. Before many years there will be few of the living alumni who knew these men, and it is pleasant to think that their kindly faces will become familiar to the generations of dentists who are to be educated in the halls of the old Ohio College of Dental Surgery, the second in the order of establishment in the civilized world.

List of Medicines Suggested for Use by Dentists.

By A. W. Harlan, M. D.

Iodol.
Alcohol.
Menthol.
Eucalyptol.
Myrtol.
Alumnol.
Eugenol.
Betanaphthol.
Lysol.
Tinct. Capsicum.
Tincture of Iodine.
Tincture of Aconite (root).
Aconite Liniment.
Compound Tincture of Iodine.
Tincture of Cannabis Indica.
Arsenic.
Cocaine Hydrochlorate.
Ammonia.
Aromatic Spts. Ammonia.
Dialyzed Iron.
Chloroform.
Ether.
Nitrite of Amyl.
Glycerine.
Alum.
Boro-Glycerine.
Liquid Vaseline.
Bichloride of Mercury (Tablets).
Peroxide of Hydrogen.
Pyrozone, $\frac{3}{5}$ per cent.
Chloroform Water.
Pyoktanin, Yellow.
Aluminum Chloride.
One Grain Sulphate Quinine Pills.
Chloral-Camphor.
Cosmoline.
Papaine (Carica Papaya).
Camphor.
Fluid Extract Tonga.
Fluid Extract Jamaica Dogwood.
Citrate of Caffeine.
Resorcin.
Sulphate of Copper.
Phenol-Camphor.
Trichloracetic Acid.
Tannic Acid (Tannic Acid and Glycerol).
Tartaric Acid.
Boric Acid.
Lactic Acid.
Sulphuric Acid.
Chromic Acid.
Carbolic Acid.
Creosote?
Acetic Acid.
Aromatic Sulphuric Acid?
Two per cent Sulphuric Acid in Cinnamon Water.
Oil of Cassia.
Oil of Cinnamon.
Oil of Wintergreen.
Oil of Cloves.
Oil of Cajeput.
Oil of Peppermint.
Sulphate of Zinc.
Iodide of Zinc.
Chloride of Zinc.
Stearate of Zinc.
Carbonate of Magnesia (Milk of Magnesia).
Sulphate of Soda.
Spirits of Camphor.
Formalin.

Sulphate of Atropia.
Fluid Extract of Hamamelis.
Aristol, Loretin and Nosophen.
Nitrate of Silver—Crystals.
Nitrate of Silver—40 gr. to oz.
Wine of Opium.
Silico Fluoride Sodium.
Dried Carbonate of Soda.
Ammonol, 10 gr. powders.
Calcium Sulphid, $\frac{1}{10}$ gr. pills.
Sulphonal.
Phenacetin.
Acetanilid, 5 gr. powders.
Permanganate of Potash.
Chlorate of Potash.
Eucaine solutions are made by boiling. Use boiled or distilled water for making all solutions.
Apomorphia, $\frac{1}{16}$ gr. Tablets.
Acetate Morphia, $\frac{1}{8}$ gr. Tablets.
Eucaine B.
Orthoform.
Zeroform.
Digitalin, $\frac{1}{120}$ gr. Tablets.
Lanolin.

This list is only suggestive. Many of the drugs should be purchased in small quantities only, and solutions should be made at the time they are needed ; old solutions are frequently useless.

DOMESTIC CORRESPONDENCE.

Letter from New York.

New York, April 8, 1899.

During this past winter several prominent dentists of Greater New York have been seriously ill—notably Dr. C. D. Cook, of Brooklyn, and Dr. C. A. Woodward, of New York. Dr. Cook's life was despaired of at one time, but he has quite recovered, and is his genial self once more. Dr. Woodward, while perhaps not so near death, has had a long, lingering illness, and is only just now getting around.

Two other well-known men died within the last two weeks: Dr. T. H. Wadsworth of New York, and Dr. J. P. Geran, of Brooklyn.

Dr. Wadsworth died suddenly while in the office of his physician, to whom he had gone to consult.

Dr. Geran's illness was brief, and as noted, resulted fatally.

The dreadful fire at the Windsor Hotel was in the heart of that part of New York City where the greater majority of the best known dentists are located. Several are within a stone's throw of the hotel—many had patients in the hotel, and were much interested one way or another. We observe that one of the sons of Dr.

E. Parmly Brown made himself conspicuous in his work of rescue there.

The meetings of the various dental societies since January 1, have been all remarkably full of interest, and the West and Southwest have contributed largely to this end.

The "Central Dental Association of New Jersey" had Dr. A. C. Hart from the far Pacific Coast; (stopping long enough in Chicago to become somewhat acclimated).

The "Odontological" had Dr. Howard T. Stewart, of Mississippi, and the "Institute" had Dr. W. J. Younger, formerly of San Francisco, but now a Chicagoan.

Then the annual meeting of the First and Second District Societies, held in Brooklyn early in January, the Thirty-first Annual of the "Odontological" January 17, and the Third Annual Banquet of the "Institute" at Delmonico's February 24, were each attractive—brought out a large number of our best men—and from a social standpoint at least greatly advanced the usefulness of these organizations.

Unification of State laws has been ably argued for before the First District by Dr. E. C. Kirk.

Dr. J. Leon Williams was again *the* attraction at the annual of the "Odontological" this year, giving an afternoon and evening session, and bringing out the largest attendance of any society.

The feature of the "Institute" banquet was the presence of the "American Academy of Dental Science" of Boston, and encouraging a spirit of social intercourse with our fellow practitioners.

Prof. William Tod Helmuth, responding to "The Surgeon and the Dentist," after a few general remarks, read an original poem, in which he endeavored to show that surgery is older than medicines.

Prof. Eugene H. Smith, of Harvard, said that a school should be a *good* school, rather than a *large* school, and advocated making the degree of D. D. S. *equal to*, rather than merging it into M. D. Advocated admitting no one to a dental school unless he is a B. A.

Rev. Dr. Wilton Merle Smith, whose reputation as the best pitcher at Princeton will always be prominent, spoke of the advance of dentistry to liberalness and broad-mindedness. He condemned controversy, when it takes all the sweetness out of men.

Joe Howard, the newspaper man, who followed him, referred to him (Dr. Smith) as a "Corker from Corkville."

Rev. Dr. Cuthbert Hall advocated the essential unity of *all* learned professions. We have overlooked the annual meeting of the Central Dental Association of Northern New Jersey, which occurred February 20, at Newark, N. J. The "Hornets," as they are known, are always lively, and their "Annual," has come to be known as a *very* good thing. The one prominent feature of this year's "Annual," was the fact that *all* the "talent," were "Jersey-men."

The Governor--Foster M. Voorhees—was to have been the leading card, but at the last moment was compelled to send word that he could not come.

That veteran war horse of dentistry, Dr. C. S. Stockton, one of the charter members of the C. D. A., gave a résumé of the society's nineteen years of progress.

Dr. G. Carleton Brown, of the board of examiners, talked on "Interstate Reciprocity," in the same vein as Dr. Kirk at the First District meeting in the earlier part of the year.

Dr. B. F. Luckey laid down the laws of "Ethics."

Dr. R. M. Sanger argued for coeducation, "The Dental Woman," in a most flowery way.

The March meeting of the "Institute of Stomatology," was held at the office of Dr. S. H. McNaughton, 63 West Forty-ninth Street.

Prof. Robert H. M. Dawbarn, of the Polyclinic Medical School and Hospital, read a paper entitled "False Tonsils, Including Their Relationship to Stomatology," in which he tersely and briefly showed the dentist's relation to such matters.

The paper was especially discussed by Prof. D. Bryson Delevan, of the "Polyclinic" and Prof. Wendell C. Phillips, of the New York Post Graduate Medical School and Hospital.

Prof. Dawbarn divided the medical school interested in the oral cavity into rhinologists, laryngologists, stomatologists, neurologists, otologists, general practitioners and general surgeons.

The "Institute" also held a sort of *extra meeting*, at 5 P. M., on March 17, at the office of Dr. St. George Elliott, 651 Madison Avenue. This was purely an informal meeting, when one special subject. "System as Applied to Instruments and Books," was explained. Subsequently some new appliances were shown and a

method of vulcanizing plates between metal surfaces described. Those present then adjourned to the Knickerbocker Club, at 6:30, for dinner. This is the second or third meeting of the kind this winter, at 5 P. M. Special subject, informal, social, and dinner at 6:30 to follow—a sort of "Dutch treat."

The meeting of the First District Dental Society for March was addressed by Dr. F. L. Ames, the president of the State society, and by Dr. F. Milton Smith, and by Dr. W. Irving Thayer.

Dr. Ames was paying his official visit to the first district, and read quite an exhaustive paper, describing the efforts of the pioneers in dentistry to elevate their profession, and leading up to his desire to see the district societies, which in New York are the legal or State bodies, increase their membership and enlarge their sphere of usefulness.

Dr. Smith's paper was entitled, "Our Brother Dentist—What of Him?" and was a strong plea for the better observance of the Golden Rule.

The remarks of both these gentlemen seemed to be so much in line with the thought of all those present, that there was but little opportunity for discussion.

Dr. Thayer read a brief paper on "Secret Remedies," in which he endeavored to show that there was nothing so well known but that it was a "secret," because *some* of its effects might not be known by the one using it. He inveighed against the use of cataphoresis, endeavoring to show that it was the cause of the death of the pulp in many cases, and claiming that it was "secret," because so little understood.

There was but little discussion, but what was said was so pointedly against him, that the doctor left the room before the gentleman speaking had finished, and what might have been a lively, and perhaps profitable discussion, did not go on much further.

Central Dental Association of Northern New Jersey, March 20, had as its essayist Dr. Louis C. Le Roy, of New York. Owing to his illness he could not be present and his paper was not read. Those present resolved themselves into a committee of the whole, as it might be called, and listened to the lawyer of the State society, who had just obtained a *permanent* injunction in the case of the Dentacura Co., which had attempted to use a committee report as an advertising medium. The society feels much elated in its success in checking this matter so promptly.

The New York Odontological Society's meeting of March 21 was very interesting.

The afternoon clinic which preceded the evening meeting was well attended, which was evidence of the general interest in the subject of pyorrhœa alveolaris.

Howard T. Stewart, D. D. S., of Greeneville, Miss., gave a practical demonstration of his entire method of operating for and treatment of the disease. There is nothing elaborate about his method, but it is the positiveness with which he removes the calcular deposits which makes his operation successful.

In the evening of March 21, he described his method of procedure in a paper, the title of which was, "Partial Removal and Decalcification of Cementum in Treatment of Pyorrhœa Alveolaris."

The first requisite for success does not depend upon what method is adopted, but how thoroughly the operation is performed, and from the doctor's performances in the afternoon and language in the evening, nothing but heroic measures will suffice; but it is done quite, if not entirely, painlessly by the use of one per cent cocaine or of eucaine *injected* into the gum tissue fore and aft, then with chisels or lances which cut on three sides, or scalers, excavators, or any other instruments that one is sure will reach and remove all deposits, proceed until the teeth are absolutely clean a short space beyond the attachment of tooth to socket; *be positive of this.* Forcibly syringe the pockets frequently with distilled water (hot) into which have been placed a few crystals of permanganate of potash. The task of treating teeth affected with pyorrhœa is laborious and difficult, and only one or two teeth should be treated at one sitting; attention to more would be attempting too much. Finally, after all operating has been completed, dry the parts and flood the pockets with fifty per cent solution of commercial sulphuric acid. This must be retained in place and the parts protected by covering with a film composed of

Shellac	9	ounces.
Benzoin	2½	drachms.
Balsam tolu	2½	"
Carbolic ac	3	ounces.
Oil cinnamon	1½	drachms.
Saccharine	1½	"
Alcohol to make	2	pints.

which allow to dry before exposing to action of secretions of the mouth.

A mouth wash of permanganate of potash, eight grains, to eight ounces of water is prescribed for constant use many times daily until the tissues are thoroughly healed. On this much of the success depends. Such completes the operation, and the patient is discharged with the instruction to call again in a month, when if any evidences of the trouble remains about any tooth that alone should be treated, same as before, or it may be necessary to devitalize that tooth, treat with twenty-five per cent solution sulphuric acid, being sure to get beyond apical end. Do this for several days, then fill root canal as usual and discharge again for a time.

The doctor was asked what action or what part he thought his medicaments exerted toward the success of his operations. He said he did not know, but did know that it does the work. He cited an extreme case treated for one of the Havemeyer family which was deemed hopeless by Dr. Sayre, which was substantiated by the latter gentleman.

The Institute of Stomatology held its April meeting at the office of Dr. Charles O. Kimball, 27 West Thirty-eighth Street.

Dr. R. H. M. Dawbarn presented a patient with sarcoma of the antrum, stating that it was an instance of want of foresight on the part of a dentist. Sharp neuralgic pains had caused the patient to visit a dentist, who extracted five teeth, three on the affected side and two on the other, for the relief of pain. Subsequent medical and better dental examination revealed a malignant growth. The president of the "Institute," Dr. E. A. Bogue, was requested by Dr. Dawbarn to prove a portion of the diagnosis by thrusting a needle through the bone of the antrum. The needle went through easily—as Dr. Bogue expressed it, "as if through a sponge"—whereas if it had been normal bone, it would have been impossible to have pushed the needle through.

Dr. Dawbarn invited those who desired to be present at the "Polyclinic" on the following Friday, when he would operate for the removal of the maxilla.

Dr. Maxfield presented models showing a piece of bridge work.

Dr. Louis C. Le Roy presented models of an upper and lower jaw, showing excessive hypertrophy of the lips and buccal tissue. the results of wearing ill fitting dentures.

A paper by Dr. L. C. Bryan, of Basel, Switzerland, was read by Dr. C. O. Kimball; accompanying it was a model illustrating the method Dr. Bryan described of banding loose teeth in cases of

pyorrhœa. Dr. W. J. Younger, of Chicago, then read a paper on "Pyorrhœa Alveolaris from a Bacteriological Point," in which he brought out some new ideas. His experiments had been conducted but a short time, and he did not wish to consider them as entirely conclusive, but the conclusion so far reached was, in his mind, that "pyorrhœa" is due to a specific bacterium, not yet known or studied, that the irritation is local and not constitutional, that ninety per cent of the Anglo-Saxon race are affected with it, and that it affects *all* classes and *all* temperaments. He spoke particularly of his success in the use of lactic acid for treatment, after, of course, thorough mechanical removal of all detritus. Dr. Younger said after describing and defining pyorrhœa, that it (generally) results in the ultimate loss of the teeth. Dr. Edward C. Briggs, of Boston, opened the discussion, in the course of which he stated his belief that the pulp has served its purpose when a tooth has been fully erupted, and that said tooth, if the pulp is *surgically* removed, is better than with the pulp. He stated that in the treatment of "pyorrhœa" he always surgically devitalizes the teeth affected.

Drs. S. A. Hopkins, of Boston, Bonwill, of Philadelphia, J. Morgan Howe, of New York, J. F. P. Hodson, of New York, participated in the discussion.

Dr. Howard T. Stewart, of Greenville, Miss., was to have been present but was suddenly called home. Dr. Hodson was called upon to describe Dr. Stewart's method, which he did by referring to the clinic given by the "Odontological" society, March 21 (which see).

Dr. S. E. Davenport took exception to the wholesale devitalization of teeth.

Fraternally,

"BOROUGHS."

TO THE EDITOR OF THE DENTAL REVIEW:

Since reading Dr. Gramm's paper on "The Dental Profession in Charity," published in the February number of the REVIEW, I have been thinking of what a need there is of charity in its highest sense among those of us whose lot it is to practice in country districts. Of course, the charity of the country practitioner is quite different than that suggested by Dr. Gramm.

Very frequently I have parents come into my office with a child who has an aching tooth. The parents are rather persistent

in their demands for the tooth's extraction. On being told that the pain can be relieved and the tooth saved by proper treatment and filling, they inquire what the charges would be for saving the tooth. As soon as they realize the operation would cost a little more than an extraction, they become very skeptical about the pain being stopped by treating the tooth and then insist upon its being extracted.

If it were the stingy father (who may have plenty of land and a good bank account) that would suffer the pain and loss of the important organ, I would almost be inclined to extract without much hesitancy; but it is the innocent child who cannot comprehend the situation that is to suffer the rest of his life if the tooth be extracted.

In such cases what are we to do? Would it not be better for our own practice, the profession in general, and the child in particular, for us to save the tooth, although we cannot get a just fee for doing so? Would it not be better for us to take what we can get in such cases as I have described, and teach these people what we can do in the way of preserving aching teeth than to let them go away with the idea that the only remedy for the aching tooth is the forceps? If we give the tooth our best service and preserve it well, will not that child have more confidence in dentistry and will he not be more apt to employ a dentist in his future life? When that child becomes full grown and has children under his care, will he not be more inclined to have his children's teeth cared for at proper times than he would if he had been taught that extraction were the only relief for toothache?

I believe it would be best for us and for the next generation of dentists also if we would use more charity in these cases that come so often to our notice.

J. W. D.

DENTAL COLLEGE COMMENCEMENTS.

Chicago College of Dental Surgery, Dental Department of Lake Forest University. The Seventeenth Annual Commencement, Central Music Hall, Wednesday, April 5, 1899, at 2:30 P. M. Conferring of degrees, Truman W. Brophy, M. D., D. D. S., LL. D., president of the college; doctorate address, John H. Finley, president of Knox College.

Graduates, 1899—Emil Albert Ableiter, Lewis Judson Andrews, Fred C. Angle, Amos Elias Adsit, John Bohr, Rudolph Beck, Roy George Booth, Albert J. Buchheit, Otto Baumrucker, George Elmer Bratten, John Harold Burton, Silas Alonzo Beason, Arthur Eugene Bartholomew, George Bell Brown, Stephen Arthur Brady, George Peter Brenner, Charles Leroy Bartholomew, Frank Edward Blakeslee, George Henry Bomer, Edward Gustave Burgman, Holmes G. Brown, Orville Lee Bates, Edgar S. Barnes, Clark Milton Cuthbert, William Austin Cox, Edgar Dell Chandler, Homer L. Cheever, Carl Burr Case, Elbert H. Cornwell, William Lambert Colyer, Oscar Jno. Cunningham, Geo. Washington Diepenbrock, William Dorfner, Glenn S. Dolson, Peter Thomas Diamond, Abraham Drosdowitz, Mell M. Everett, Griffith D. Evans, James Wilbert Ewin, John English, Jr., Harry Melville Ferguson, Emery Lee Fincham, Bruno Wesley Fick, Lemuel P. Fry, David William Fithian, Conrad Henry Forster, Howard Frace, C. A. Flemming, James Merrick Gardner, Edwin James Greenfield, Fred. Arthur Gray, Will McMahan Gabriel, Warren Alonzo Gamble, Charles Edward Gerretson, Edgar Lyon Gausby, J. J. Gillane, Joseph Wesley Hardin, Frank Zajicek Hanscomb, Frederick Lee Hamil, Frank Joseph Haessler, Ralph Elwood Hayden, Frederick Hewetson, Robert Conover Hornor, Wilfred P. Harvey, Edward James Hanan, Fred. Elvin Hall, Nazareth Stephen Haradjian, Paul Hendricks Harlan, Harry Clinton Higgins, James Lawson Hamilton, Elton Ellsworth Hankins, Otto Holinger, Virgil Hoffer, Charles Eugene Hirth, John Charles Hothan, Harry Huburt Herren, Thos. H. Harris, Alexander Ivey, Jr., John E. Isely, Geo. Richard Jones, Edward Elmore Johnson, John A. Kaufer, James Anderson Kirkland, Conrad G. Kinstad, George W. Kerner, Frank Joseph Kuehn, John Petronius Luthringer, Lukas Barend Lindeboom, Walter Mears Long, Oscar Alonzo Laughlin, William Luxmore, Eric Lindholm, George Richard Lanning, Edwin Hamilton McTaggart, Robert De Witt McKean, Richard Joseph McClevy, Irvin E. McVay, Hugh J. MacKechnie, Richard Daniel Moran, Fred. Brown Morehead, John McPhee, James Monroe Manton, George Massart, Louis Herrman Maas, Albert Edward Morey, Manly F. Michaelis, George Wilson Nevius, Richard E. Nixon, Carl James Nielson, Emmett M. O'Keefe, John Orth, William C. Penrose, Charles G. Pomainville, John Henry Pierce, Malcolm Pounder, Frederick Allen Richards, Edward L. Ritzenthaler, George Meyer Ruttan, Robert Morton Riggs, Benj. Franklin Redman, William Hanna Roth, Alfred Ebhart Rocke, Harry Adlai Stevenson, Truman Shattuck, Clem. Eugene Shidler, Walter R. Stokes, C. A. Spellman, Harry James Smith, Harry Dowdell Shaw, John Joseph Seidscheck, Richard Anson Smith, Alva Leonard Spindler, Edward H. Steel, David Leon Stanton, Allison Smith, Walter Robert Schell, George W. Torrey, M. D., Berna Sexton Tyler, Edward Sexton Wingren, Dudley Welch, Charles Aaron Wood, Geo. Bertram

Williamson, William Eugene Weis, James Alfred Wells, J. Foster Flagg Waltz, John Castle Warnock, Clifton Wines Wolfenberger, William Stair Walters, Charles Allen Wayde, Philip J. Wendel, Pierre Marcel Wuillemin, S. I. Williams, Thomas James Wilson, John Abner Zartzin.

Northwestern University Dental School, Grand Opera House, Thursday afternoon, April 6, 1899, at two o'clock. Conferring degrees, Henry Wade Rogers, LL.D., president of university; doctorate address by Alton H Thompson, D. D. S.

Graduates—Francis Dean Arter, Thomas Wright Axtell, Loran Platner Akers, Walter Hurlbut Albright, Frederick Samuel Anable, Sylvester W. Arthur, Llewellyn House Armstrong, George Maurice Brosnihan, William Henry Baker, Arthur Henry Brown, Christopher Bostelmann, Leslie Orville Barnard, Louis Blonn, Walter Crossett Barber, Howard Todd Bond, Roscoe Stanton Bayne, Irving Charles Bronson, Leslies St. Clair Bugbee, Wayland Centinary Bradshaw, Carl Hildor Brown, William Herman Barth, William Ernest Bartels, Harry Buras Bishopp, James Herbert Calder, Robert Lee Cosner, Albert Samuel Cork, Walter De Witt Cornell, Frank Edgar Carmichael, Herbert Milton Craig, Carroll Clay Castle, Charles Bernard Campbell, Audley Elmo Childs, Cara Elizabeth Duth George Levi Dent, LeRoy Dellibac, Lewis Charles Dow, Albert Carl Davidson Claude Willott G. Dodge, Wells Dewell, August Allen Doughty, Armin Joseph Dieckmann, Joseph Warren Dunning, Howard Garrett Davis, Gail Borden Elliott Federick Ferdinand Ehlers, Alfred Robert Ebenreiter, Arch Elbert Ely, Herman Gernate Eakins, Maria Teresa Albini Foster, James Edward Forsyth Walter Flynn, John Samuel French, Frank Terry Graham, Oren Elner Ganoe Frank Theodore Gerecke, Fred William Gethro, Barney Finnell Greenhow Frederick Redmond Grigsby, Edward Austin Gibbon, Ralph S. Graham, Alber Oatly Haviland, Harvey Edgar Harrison, John Arthur Huff, William Riser Hepburn, Max Romeyn Harvey, William Seldon Hicks, Herbert George Haeseler Henry Finley Helms, Harvey J. Hemminger, Ralph Y. Hunt, Delbert Danie Hallenbeck, Ralph Hepler, Oliver Harstad, Andrew Jackson Hodges, Charle Wilber Hickman, R. William Johnson, Ane Marie Jorgensen, Richard Ro Johnson, Burton Clermont Johnson, James McGregor Jones, Edward Marion Joll Israel Stewart Kirkwood, Birdine King, John Bernard Klausner, Edward Kramr John Cornelius Kinney, William Oscar King, Walter P. Kountz, Fred Kestle Paul Peter Lucke, Emory Milton Lotts, Arthur Clyde LaTouche, Stephe Andrews Lyon, Martin Julius Linderholm, Emil Robert Luebert, Glenn Lowe Merritt, Jean Moyer, William Ivan Maddock, Joseph Edward Miner, Joh Christian Meng, Nicholas John Maun, Samuel Alanson Marlow, Harry Dani Magner, Henry Alphonso Meyer, N. B. W. McCartney, Ernest Fielding McCar ney, James Harry McKay, William Catlin McWethy, Oscar Caleb Nylund, Sylv Mary Fiala Napper, Charles Louis Nitchelm, William R. Neff, David Mortim Olkon, Burt Tenus Osher, Bertram Olver, Charles Andrew Peter, John Stephe Pennington, Rawson Kennedy Pinkerton, Ralph Waldo Parker, Frederick W liam Parker, Harry Eugene Pike, Henry Valentine Pfaff, Harry Edward Pie Walter James Petrie, William Jennings Prideaux, Frank Samuel Potts, Charles Reinfried, Thomas Reid, James Arthur Robertson, Charles Fremont Rounsevill Henry Charles Rodenhause, Frank Milfred Reed, Clair William Rober

George Andrew Ryder, Augustin Michael Rowan, Lawrence Frank Ray, Priscilla Hallam Stansell, Ada Price Swain, Ernest Samuel Francis Sprenger, Norton Vernon Smith, Charles Gottlieb Schamu, Alfred Ludwig Schmidt, Burleigh Milton Smith, Ira Benson Sellery, Arthur Solvsberg, David Arthur Smalley, Forrest Westley Simmonds, Harry Irving Swigert, William Oliver Talbot, R. Charles Traynham, David Jackson Thorp, George Delevan Upson, William Elmer Underwood, Harry Newcomb VanDeubergh, Anthony James Williams, Charles Edward Winter, Nicholas Paul Weber, Eugene Shaw Willard, Ernest Irving Waldberg, Frances M. Walsh, Charles Freer Wadsworth, Frank Morton Welch, David James Wright, Samuel August Wright, Charles Augustus Walton, Malcomb Lee Wright, Ernest Hugh Wilson, Solomon William Zipperman.

Illinois School of Dentistry.

Graduates for 1899—Harry C. Snyder, Mac Tilton, M. C. Hoag, R. W. Dodez, T. F. Condit, E. M. Carter, A. C. Aldrich, Claude E. Frazier, O. P. Jesse, E. B. Barrow, W. A. Rausch, Jete L. McCarthy, H. Brophy, W. B. Spafford, J. Addison Brown, W. L. Bradford, George Umbenhaur, Fred C. Allender, Hanferd Browne, J. B. Zielinsky, W. R. McGarvey, H. F. Grantvedt, Chas. H. Wambold, W. C. Shallanberger, N. J. Hendricks, H. N. Lancaster.

Dental Department, University of Omaha.

Graduates 1899—Cecil Edwin Beebe, Omaha, Neb., Zoro Dennis Clark, Arapahoe, Neb., Arthur George Greene, Creston, Iowa, Alfred Newton Hagan, South Omaha, Neb., Charles Oliver Hald, Grand Island, Neb., Milton Rieman Hendrix, Omaha, Neb., Walter J. Hostetter, Silver City, Iowa, Percy James Hunter, Omaha, Neb., George Henry Kay, Lincoln, Neb., Fred Norton Kemp, Pickering, Mo., Pauline Koobetsheck, Perry, Iowa, Leslie Grant Meyers, Omaha, Neb., Charles Bushnell Rich, Omaha, Neb., John Gerald Somers, Omaha, Neb.

PAMPHLETS RECEIVED.

An Ephemeris of Materia Medica, Pharmacy and Therapeutics, and Collateral Information. By E. R. Squibb, E. H. Squibb and Charles F. Squibb. 1899. Brooklyn, New York.

REVIEWS AND ABSTRACTS.

LEHRBUCH DER CONSERVIRENDEN ZAHNHEILKUNDE. VON W. D. MILLER, a. o. Professor an der Universität, Berlin. Zweite umgearbeitete und erweiterte Auflage. Leipzig. Verlag von Georg Thieme, 1898. 462 pages, 449 illustrations.

It but verifies expectations when within the short space of two years the author has found it necessary to issue the second edition of the above work. His long and faithful career as a teacher in one of the foremost intellectual centers of the world guaranteed that should he ever give way to the pressure brought to bear upon him and start out to lay down his adopted principles of conservative dentistry in book form, he would be able to treat and arrange the material in a way which should be most suitable to his students, to whom he finally dedicated his pages. But the two years which have passed over the first edition have shown that it was not only his immediate famulus who took kindly to the printed word of his master, no, to a host of German practitioners all over the length and breadth of the land, the book has come as a welcome friend warmly received, a friend whom in his simplicity and truthfulness, his broad mindedness and tolerance, we gladly see rejuvenated in the present second edition.

Fundamentally the arrangement of the second edition is the same as in the first, the first part dealing with the therapeutics and conservative treatment of the hard tissues of the tooth, the second with the treatment of the diseased plastic dental tissue. Of highly practical value are also his short chapters on pyorrhœa alveolaris, odontalgia, the bleaching of discolored teeth and the care of the deciduous teeth.

The alertness with which our author has always followed the advancing step of the profession—oftentimes having guided it himself—is again shown in the able revision which he has exercised over the second edition of his work. As in the entirety of the work so in the present additions has he not confined himself only to the teachings of the German school, but true to his native country, has kept close watch of the progress of the last two years in American dentistry, recording it carefully and with the same scrupulous bibliographical attention which characterizes the rest of the work and which makes it beyond its own individuality so very valuable to the more ambitious student and practitioner.

To American dentistry the success of this work is very gratifying, indeed, for the reason of Dr. Miller's citing American authorities extensively. It certainly tends to draw the professions of the two countries nearer to each other, as every broad minded word spoken or written will stamp out prejudices which often keep even capable men within surprisingly narrow limits. H. F.

PRACTICAL NOTES.

The Process of Refining and Manufacturing Gold Foil.*

By John Hood, Boston, Mass.

We take gold in any form or quantity, from one to twenty-four carat, and melt it with silver, alloying it down to ten carat. It is then granulated into small shot by pouring into water when in a melted state. The granulated gold is then boiled in a retort on a sand bath in nitric acid until the silver and base metals are dissolved, the gold remaining in the shape of brown mud, which is then washed, dried and melted. The result is what we call parting gold, which is .996 or .998 fine and it is from this that most gold foils are manufactured. The gold is then taken, rolled into thin ribbon, immersed in nitro-muriatic acid, which dissolves the gold and leaves the silver. Before, we dissolved the silver and left the gold.

This gold solution is then filtered to get rid of the chloride of silver, which is very light and floats to a certain extent. By filtering we get a pure solution. The gold is then precipitated.

After the gold is precipitated, it is first washed and dried, then melted and poured into ingots one inch wide, which are rolled thin in regular jewelers' rolls, and then annealed.

The ribbons are then cut into square pieces and put into a cutch made from ground parchment which holds about two hundred pieces. The cutch is then placed in parchment bands and beaten with a twenty pound hammer for fifteen minutes on a granite block weighing about seven hundred pounds. Every five minutes the cutch is opened, and the gold examined; the cutch is then split in half and the position of the pieces reversed, so as to bring the center pieces on the outside and those on the outside into the center of the pack, the reason being that the gold in the

*Read before the Vermont State Dental Society.

center spreads more rapidly than that which comes next to the hammer. The reason of this we cannot explain, but simply state it as one of the facts concerning the manufacture of gold foil. We continue beating this cutch, reversing it every five minutes, until the proper size is reached. Four cutches are used in one beating, making eight hundred pieces of gold. The gold thus beaten is laid out of the cutch and filled into a mold made from the intestines of the ox, and as thin as the skins of this mold are, they are two stuck together. As there is a rough and smooth side to each skin, the two rough sides are stuck together, making what is known as gold beaters' skin.

A mold contains 800 skins, which represent 500 head of cattle. On the ends of each mold are fifteen or twenty old skins, called "wads," and outside of these several wads made from parchment. These wads protect the gold from the hammer.

The mold before using, has to be put in order by pressing. This is done by putting it into a hot press between pasteboard, turning them every five minutes for one-half hour and then separating each skin to let out the dampness. This is called giving the mold a fly. Sometimes we have to give a mold two or three flies. It depends upon the weather. In winter, when it is dry, the molds often need no pressing whatever. In fact, they are so dry the gold will sometimes stain. When the molds are too dry, they beat the gold too solid. At this time we look for complaints. The cry is, "Your gold works stiff; it rattles like a tin pan," etc. On the other hand, in the summer when we have the dog days, it tries the gold beaters' souls. We give the molds fly after fly, and still they are not dry enough. The hammer then generates heat very rapidly, and we have to be very careful not to spoil our mold. This is done by generating so much heat by the hammer that the mold will be drawn in the center and absolutely ruined. At this time the gold will be so porous that if you hold it to the light it will look like a cobweb. At this time it works softer than it does when the molds are dry, but the complaint is that it is not tough, the instrument cuts through, etc. You will see from this that a gold beater's life is not all clear sailing.

When the cutch gold is filled into the mold, we place the mold with the 800 pieces of gold between the parchment bands the same as we did the cutch. We then beat on the mold about one hour with a ten pound hammer, stopping every five minutes

to examine the gold to see how it moves up. We have to be very careful not to beat over the edges of the gold. If we do, the gold does not spread.

After the mold of 800 pieces is beaten to about four and one-half inches square, it is laid out, piece by piece, on a calfskin cushion lined with flannel. It is then cut to size with what we call a wagon. This is a frame carrying two pieces of Malica reed, such as canes and musical instruments are made from, split into four pieces. When these reeds get dull, they are sharpened by taking a shaving off the edges. After the gold is cut to size, it is placed between pieces of paper. It is then taken and annealed on a piece of platina, piece by piece, to a cherry red. As unannealed gold is called for sometimes, it is put up without being annealed. Understand, I have been talking so far about Nos. 2, 3, 4, etc. of book foil. Later will give you the process of cylinder gold.

After the gold has been annealed, piece by piece, it is then weighed. A book is balanced in the scales, then one-eighth of an ounce put in and that is balanced. This gives one-eighth of an ounce to each book. It is then put into envelopes, marked, and is ready for sale.

In making gold for cylinders it is beaten as described before. It is then placed sheet by sheet between paper and enclosed in an iron box, with weights on the gold. The iron box is then placed on a slow fire and allowed to smolder, care being taken not to ignite the paper. After smoldering the heat is gradually let on until the paper becomes carbon. As the paper shrinks the gold shrinks with it. The carbon is then blown off, sheet by sheet, and we have what is called corrugated or crystalline gold. This is then rolled into form and cut to size, and made into style A, B and C cylinders. I have been told that corrugated gold was discovered at the time of the big Chicago fire. When the gold was taken out of the safe in one of the dental depots it was found to be corrugated. I claim to be the first one who made and sold corrugated gold. This was in 1867. Some years later a patent was taken out for the process, and I was threatened with suit unless I discontinued its manufacture. This I declined to do and no suit was entered.

I have now given you the process of refining and beating gold foil as practiced by me. I will now treat on noncohesive gold, soft gold, cohesive gold, discoloration of gold, etc.

I have been amused many times in hearing dentists wrangle at conventions over the working of noncohesive gold; also to see it quoted in many papers written by dentists for the journals that noncohesive gold contained impurities, and eminent chemists have assayed it from time to time and found a certain per cent of impurities. Now, does not it seem strange that no one as yet has ever been able to name these impurities? A chemist is supposed to be a very smart man, but facts are stubborn things, and one of these facts is that as yet no chemist has been able to name the so-called impurities in noncohesive gold. I do not propose to tell how to make pure gold noncohesive; in fact, there are very few gold foil manufacturers that know it is done. At present noncohesive gold is used very little, and, as its use is not taught in most of the colleges of to-day, it looks as if its use would soon become one of the lost arts. However, if I am allowed my opinion, I wish to say that noncohesive gold, used by one who understands it, and in cases were it is possible to use it, is one of the best filling materials to save teeth that we have. But how few there are who know how to use it. Those who do are passing away, and will soon join the silent majority.

Noncohesive gold is called by some, unannealed. We make a strictly noncohesive gold. At the present time the sale is very limited and grows less every year. Those who use it are old practitioners; in fact I do not know of any young dentist who uses it at all. I have heard some dentists at conventions speak of noncohesive gold as unannealed gold. Now they would have a sorry time of using unannealed gold for a wedge filling.

Some years ago the late Joshua Tucker, of Boston, came to me and asked me to explain, if I could, how it was that when he spoke at conventions about how difficult it was to use soft gold in some cases that some young student, just graduated, would jump up and tell how easy it was to use it. I told him it was easy to explain. "Well," he said, "I am writing a paper on gold, to leave behind, as I expect to stay on this earth but a short time, so if you can give me any points on this working of gold, do so." W said to him, "When you used gold years ago, before you bough of us, you used Abbey's soft gold." His answer was, "Yes." "We now," I said, "This gold was a noncohesive gold. The soft gol the graduates of to-day are talking about is really a cohesive gol In fact, it becomes cohesive by annealing, while the noncohesiv

does not. In other words, with the graduates' soft gold you can build down teeth, but not so with Abbey's soft gold, as that is, strictly speaking, a noncohesive gold, and does not become cohesive by annealing." After this explanation to the old gentleman, he said, "Well, it is all plain to me now. I never could account for the fact that the young men in the profession could do so much more with soft gold than I could."

Now, some who hear this will take exceptions to noncohesive gold not being made cohesive by annealing. To those I will say, "Do not misunderstand me, I am talking about cohesion, not mechanical union or interlacing." Of course it is possible to fill a tooth with noncohesive gold and apparently make a cohesive filling of it, but the dentist who does this will find he has a delusion and a snare, because he has no cohesion. It is done by mechanical union and interlacing with sharp serrating pluggers or packers, as one of you professors would say. Take this same noncohesive gold in sheet, in fact, take any number of sheets, anneal them red hot, now place them on top of each other; now take the same number of sheets of cohesive gold and do the same, and note the result. The noncohesive gold can be separated sheet by sheet, but the cohesive gold has cohered together in one mass. Now, by mechanical union force and sharp serrated pluggers, you can force the noncohesive gold together. But is this cohesion? We think not. In fact, you may be able to build down a tooth with noncohesive gold by mechanical union and interlacing, but you have no strength. In fact the filling is a delusion and a snare, and there is the trouble to-day with dentists who write for the dental journals. They do not know what they are talking about when they speak of cohesive and noncohesive gold. They seem to think it is one and the same. Here is a late quotation in one of the journals: "If pure gold foil is exposed to the atmosphere for any length of time it gathers upon its surface an imperceptible film, which while not affecting the purity of the substance itself, interferes with its cohesion. Two pieces of foil in this condition may be rubbed together and this is called noncohesion." Now that is where a great many dentists are led astray by such writings. Cohesive gold cannot be made noncohesive, any more than noncohesive can be made cohesive. Any noncohesive foil that can be made cohesive by annealing is not a noncohesive foil; the more you anneal it red hot, the more noncohesive it becomes. Speaking of

cohesive and noncohesive foil in one foil, is like saying a thing is very black and very white.

Some years ago when on a vacation, I called on a dentist, and had several discussions on gold, finding him using noncohesive gold. I told him I thought he must be mistaken on the cohesive point. The next day I called at his office, and he was engaged in building down a lateral incisor for a lady. He smiled on me, and said: "You see you are mistaken about noncohesive gold. I am building down this tooth with it." I said nothing but continued to watch him. He looked at me from time to time with a smile, childlike and bland, that said: "You see you Boston folks do not know as much as you think you do." However, his smile soon changed to disgust. As he was giving it the finishing touches with the burnisher, the whole filling collapsed and dropped out. About this time I thought it was time to go to dinner and bid the doctor "Good day." After dinner he called on me at the hotel and acknowledged that I was right, as he found, upon examination, that the filling could be picked apart, piece by piece, as it was put together. In fact there was no cohesion about it. He had made the filling by mechanical union and interlacing. Now then, in regard to soft gold. This gold is made half way between the cohesive and noncohesive. In other words, it is made the same way as you would temper an instrument. We do not temper it so much as we do the noncohesive. The way we do it we need these smart fellows to find out. Perhaps some chemist will tell you some day the means we use.

Cohesive gold is simply pure gold as it comes from the refiner. It is not treated in any way. The great difficulty is to get it absolutely pure. You have no idea of the care and skill it takes to produce pure 1,000 fine gold.

Cohesive gold has the peculiarity of welding cold, when it is freshly annealed and free from moisture or foreign matter. But how easy it is to destroy this cohesion. The fumes of most simple gases will do it. We have frequently had complaints of our gold working badly, when the trouble was that painters had been to work painting the office. Creosote, carbolic acid, etc., will also destroy the cohesion of gold. Then again, how many destroy the good qualities of gold by overheating. I have seen some dentists melt gold in annealing it, and then complain that it work hard. Cohesive gold, if in the right condition, should be capable

of cohering to itself without any pressure whatever. Anneal, say six pieces, more or less, place them on a table, then take up one and gently drop it on to the next piece, then back to the next, and so on. If it is cohesive gold, you will find that you have all firmly welded together. Then, we have dentists say that our gold is too hard. Before we were acquainted with the working of gold foil, this used to puzzle us; how pure gold could be hard. However, we soon found that the dentist did not know how to express himself. He really meant too cohesive and therefore welded together before he really got it where he wanted to put it. In fact, the most cohesive gold ever made is as soft as noncohesive. The difference is that one sticks together and the other does not. However, we admit that gold works differently at different times, caused by the condition of the skins, as explained in pressing the mold. These skins are like our hands. In summer they are moist, in winter dry. Therefore, foil does not require so much annealing in the winter as in the summer.

In regard to the discoloration of gold fillings in the mouth, I hardly feel that I have time to discuss this subject. It is one of the most annoying troubles that dentists have. As far as the gold is concerned, it cuts no figure. You will have to look for the cause elsewhere.

Some years ago we started in to find the cause, and have been on the road ever since, but have not found all the causes yet. However, here are many causes, and you take your choice. We have tried to make a gold that would discolor in the mouth, but failed. I had two dead upper bicuspid teeth. These were badly decayed at the margin of the gum. In fact, it was a good place to have filling discolor. I also had a lower tooth decayed. I prepared some gold for the two bicuspids alloyed with iron. This gold, when annealed red hot turned as black as coal. When it was slightly annealed, it would not discolor, but was cohesive enough to make a good cohesive filling. These two bicuspids were built down with this gold. I took pains to keep away from these as much as possible when cleaning my teeth. However, these fillings have never shown any sign of discoloration. On the other hand, the lower tooth was filled with our best cohesive gold, and after about two years, it turned as black as coal, and is black to this day. This case was reported in the Johnston Bros.' journal at the time by Professor Thomas H. Chandler. At this time I went through a

long course of experiments with him, which are too numerous to mention. I also gathered together about one ounce of old discolored fillings, and took them to Dana Hayes, the State assayer, who analyzed them for me, and pronounced the black deposit sulphide of gold. These experiments were tried in 1875, and I satisfied myself at that time and have not had any cause to change my mind since, that the discoloration of gold fillings is only on the surface and is no fault of the gold. I also found that by taking a piece of refined gold, say six inches long, burning one end in a spirit lamp, a little globule would melt bright; burnish the other end, say two hundred times more or less, and it would discolor a dark red, showing the gold took iron from the burnisher.

In conclusion, I will show you the difference between the precious and base metals. I hold in my hand a bar of pure gold, also tin. You notice I can bend the tin back and forth with ease. In fact, after continued bending the tin will fall apart. Now notice the difference with the pure gold. I bend it once, twice, and that is all. It has stiffened up so it cannot be bent any more. Now, this same thing takes place in a gold filling. The first blow you strike your foil causes it to stiffen; therefore, be sure you get it placed before you strike the first blow. This holds good more in the precipitate gold than in foil and cylinders. Coax your gold into position before striking the first blow.

I will add here that I served my time as a gold beater and then was taught the art of refining gold and its manufacture into gold foil. I then traveled on the road, calling on all the prominent dentists in the country and large cities. I have stood over some of the best operators and witnessed a great many difficult operations, both in private offices and dental colleges, and must acknowledge that I owe much to my success as a gold foil manufacturer by what I have gathered in this way.

MEMORANDA.

Have you tried hydrargyrol?

Now, *honestly*, which is the best alloy?

Dr. A. M. Dudley, of Salem, Mass. is dead.

A dental society has been organized in Elgin, Ill.

Texas Dental Association will meet in Waco, May 16.

Dr. A. H. Thompson, of Topeka, was in Chicago in March.

Saccharin is now quoted at seventy to eighty cents per ounce.

Why not use powdered carbonate of magnesium as a dentifrice?

The Kansas State Dental Society will meet in Topeka, May 2, 3 and 4.

Dr. Gordon White has been ordered to take a sea voyage to recover from the grip.

What to do in case of poisoning by opium is to use *albumen*, said a recent senior.

Dr. T. P. Hinman, of Atlanta, is the new president of the Southern Branch, N. D. A.

The Iowa State Dental Society will meet in Des Moines, May 2, 3, 4 and 5. A good meeting is assured.

If you are going to Paris in 1900 better begin to save money now. The Dental Congress will be held in August, 1900.

Internal antiseptics are mercuric bichloride, ichthyol, salol, quinine bisulphate, beta-naphthol and resorcin are all said to be good.

This is the time of the year when a big D. D. S. appears after the name of about every member of a senior class in the United States.

Dr. J. W. Cormany, of Mount Carroll, Ill., has been ill for about six weeks. He is slowly recovering from his illness we are happy to state.

The Diamond Match Company have dentists employed to systematically examine the teeth of all workers in their various match factories in this country.

We are regularly receiving *La Odontologia*, edited by Florestan Aguilar, D. D. S. It is filled with very useful and interesting matter from month to month.

So many State societies will meet in the next month or so that we will all get new carpets, curtains and a vacation, while the ceilings are done and new paper is placed on the wall.

One twentieth of one per cent creolin is recommended as a dressing for burns when the tissues are much destroyed. Bicarbonate of soda saturated solution is always good in recent burns or scalds.

For rest, relaxation and recreation the French Lick Springs or West Baden Springs in southern Indiana, which are reached by the "Monon" route, are the best for rheumatism, stomach and liver, as well as nervousness.

If any of our dentists enjoy outdoor life as our friend Dr. Alfred Burne, Sidney, New South Wales, does, we are not acquainted with his worship. When we get rich we are going out there to join in aquatics and athletics and other sports which are so enticing. Rowing, wheeling, golfing, etc., is about our size

NOTICE.

Any one having new appliance instruments, etc., please send same with full description to J. E. Keefe, 1114 Venetian Building, Chicago, chairman Dental Invention Committee of Illinois State Dental Society, which meets at Chicago May 9 to 11.

WISCONSIN STATE BOARD DENTAL EXAMINERS.

A meeting of this board will be held in Janesville on Wednesday and Thursday, May 3 and 4, 1899, for the purpose of conducting examinations. All persons desiring to be examined should be there promptly at 9 A. M.

W. H. CARSON, D. D. S., Secy.

The next regular meeting of the Illinois State Board of Dental Examiners will be held on May 13, 1899, at the Chicago Business College, 67 Wabash Ave., Chicago Ill. Those desiring to take the examination should notify the secretary before the date of meeting.

J. H. SMYSER, Secretary, 70 State, St., Chicago, Ill

OHIO STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Board of Examiners of the State of Ohio, will be held in Columbus, Ohio, Wednesday, May 31, 1899. All persons desiring to take the examination must make application to the Secretary before May 20.

Address, L. P. BETHEL, *Secretary*, Kent, Ohio.

THE TREATMENT OF BALDNESS.

Barie, in the Cronica Médica, gives the following:

Hydrochloric acid	1 dr.
Alcohol	3¾ ozs.

Rub the hairy scalp every night with this liquid, says the author, and the falling of hair will cease.

TO LESSEN THE DANGERS OF COCAINE INJECTIONS.

℞ Resorcin	10 gm.
Cocainæ hydrochl	20 "
Aquæ destill	100 "

M.

The resorcin diminishes the toxic effect, increases anæsthetic action, and prevents the crystallizing of the cocaine.—*Havilland Hall.*

CHICAGO DENTAL SOCIETY.

The following officers were elected at the April meeting: President, Garret Newkirk; First Vice President, Geo. W. Cook; Second Vice President, B. J. Wikoff; Recording Secretary, Elgin MaWhinney; Corresponding Secretar

S. Bigelow; Treasurer, A. B. Clark; Librarian, C. J. Merriman; Board of irectors: E. Noyes, J. N. Crouse, J. G. Reid; Board of Censors: A. W. Harlan, hairman, W. V-B. Ames, C. N. Johnson; Committee on Exhibits: J. E. Nyman, hairman, H. A. Gunther, A. F. James.

FŒTID RHINITIS.

℞ Salol ..... ℥ i.
Acidi boracici ..... ℥ ss.
Acidi salicylici ..... gr. vij.
Thymoli ..... gr. iij.
Talci ..... q.s. ad ℥ ij.
M. S. To be snuffed up night and morning.—*Seifert.*

To remove comedo, or "blackheads," use pressure, frequent washings with : water and tincture of green soap, and the following stimulating lotion :

℞ Zinci sulphatis,
Potassii sulphureti aa ..... dr. j
Aq. rosæ ..... f. oz. iv.
M.

If irritation is produced, discontinue the prescription for a time.—*Stelwagon.*

ANTISEPTIC POWDER.

℞ Pulv. camphoræ ..... 5 parts.
Pulv. bismuthi subnitrat ..... 20 "
Pulv. acidi salicylici ..... 20 "
Pulv. iodoform ..... 55 "
M. S. Apply to wounds and ulcerous surfaces.

—*Cazozzani.*

FOR FŒTID BREATH.

The following formula is recommended as a mouth wash in fœtid breath. . *gén de Pharm. et de Hyg.*, Vol. I. p. 15) :

Saccharin
Soda bicarbon ..... aa 1.0 (15 grn.)
Salicylic acid ..... 4.0 (4 dr.)
Alcohol ..... 105.0 (4 fl. oz.)

—*R.*

FRAGRANT TOOTH WASHES.

I.

Oil of peppermint ..... 1 dr.
Oil of anise ..... 1½ drs.
Oil of cloves ..... 15 mins.
Oil of cinnamon ..... 15 mins.
Saffron ..... 10 grs.
Alcohol ..... 1 pint

II.

Star anise ..... 1 oz.
Cloves ..... 2 drs.
Cinnamon ..... 2 drs.
Oil of peppermint ..... 15 mins.
Diluted alcohol ..... 2 pints.

TO PURIFY THE AIR IN A ROOM.

Guaiacol	10 drams.
Eucalyptol	8 drams.
Carbolic acid	6 drams.
Menthol	4 drams.
Thymol	2 drams.
Oil of clove	1 dram.
Alcohol (ninety-five per cent)	170 drams.

Mix and dissolve. To be frequently and plentifully sprayed about the room Especially valuable in case the room be occupied by a phthisical patient.—*Practitioner.*

Formalin (forty per cent)	600 minims.
Creosote (beechwood)	150 minims.
Turpentine	375 minims.
Menthol	60 grains.

Mix. Twenty to thirty minims to be heated on a metal platter as occasio demands.—*Riforma Medica.*

AN OPEN LETTER.

To the Members of the National Dental Association: From letters receive I find that the impression prevails that I, as assistant recording secretary, a supposed to be in a measure responsible for the nonappearance of the 1898 vo ume of the N. D. A. Transactions.

In justice to myself, I take this method of saying that the only portions of t work for which I am individually responsible, viz., the "Minutes of the Oma Meeting," and the "Section Organization," were completed at an early date, b by instructions from headquarters, were held by me until called for by the bu ness manager of the S. S. White Publishing Company, which was not un December 15, proofs of the same having been mailed to me January 20.

All other matter pertaining to the volume was, by instructions of Dr. Crou Chairman Executive Committee N. D. A., transferred by me to Dr. Cushi recording secretary.

The package containing the stenographer's transcript of the discussions w not received until October 11, and was transferred unopened to Dr. Cushing, whom all editorial work was done.

With the transfer of all documents, in October last, my responsibility ceas

Respectfully,

WM. ERNEST WALKER,
Assistant Recording Secretary N. D. A.

ALCOHOL, THE ANTIDOTE FOR EXTERNAL CARBOLIC ACID POISONING.

Dr. A. M. Phelps, New York, N. Y., refers (*N. Y. Med. Jour.*, Jan. 14, 18 to a case, reported by Dr. Bernard Weiss, of local poisoning with pure carbo acid injected into the vagina with a fountain syringe, the patient having put pu carbolic acid into water after it had been introduced into the fountain bag. treated the case with sodium sulphate solution. This sodium sulphate forms w carbolic acid a sulphocarbolate of sodium, and neutralizes the effect of carbo acid. Dr. Weiss also states that "this chemical antidote even Witthaus fails mention in his *Chemistry*."

No doubt sodium sulphate does exercise a soothing effect in local carbolic acid poisoning, but it will not prevent the blistering or the deep escharotic effect of carbolic acid when applied pure to the tissue. The profession needs an antidote that will *at once neutralize the effect of carbolic acid*, and render it in a moment's time perfectly inert, no matter how or to what tissues applied.

Dr. Seneca D. Powell, of New York, has for a long time used in his clinics at the Post-Graduate Hospital an antidote, alcohol, that we have all come to recognize as a specific. It is not an unusual occurrence to see Dr. Powell catch in his open hands a quantity of pure carbolic acid, poured into them by a nurse from a bottle. In a few moments the doctor puts his hands into a basin of pure alcohol, and no escharotic effect is observed whatever from the action of the carbolic acid upon the skin. At present time we are flushing out abscess cavities with pure carbolic acid and washing them out a few moments later with pure alcohol. In empyema, Dr. Powell, after making a large opening in the chest wall, washes out the cavity with a ten per cent solution of carbolic acid, after which pure alcohol is used, and no bad effect has thus far been observed from this treatment. The cavity of the pleura is rendered aseptic. From personal observations and demonstrations in the use of pure carbolic acid, followed by the use of alcohol, Dr. Phelps states positively that we have in alcohol an absolutely safe and sure specific against the escharotic action of pure carbolic acid. This fact should be given wide publication, because in cases of carbolic acid poisoning with homicidal intent, if, immediately after the administration of the poison, alcohol was thrown into the stomach of the individual, the poisonous effect of carbolic acid would be at once neutralized. However, as to the subsequent constitutional effect from the absorption of the new compound formed Dr. Phelps cannot speak, but certainly in all cases of local carbolic acid poisoning, particularly in such a case as that mentioned by Dr. Weiss, alcohol is an absolute, powerful, and immediate specific.

ILLINOIS STATE DENTAL SOCIETY.

By vote of the society one year ago it was decided that the thirty-fifth annual meeting should be held in Chicago, and that it should be largely a clinical meeting. The committee on clinics has certainly provided an excellent list, and we trust this will be one of the largest and most profitable meetings ever held in the "Garden City."

The meetings and exhibits will all be held at the colleges, alternating between the Northwestern University Dental School and the Chicago College of Dental Surgery.

All who desire space for exhibits should communicate either with Dr. H. J. Goslee, Wood and Harrison Streets, or with Dr. J. H. Prothero, 146 Franklin Street, as these two gentlemen constitute the committee of local arrangements.

The Palmer House will be headquarters for visiting members and guests.

Arrangements have been completed with the Western Passenger Association whereby one and one-third fare will be granted on the certificate plan, from all points in the State and from St. Louis. Those traveling over more than one line of road, should take a certificate from each.

It has been decided to complete the work of the society Thursday evening, and that on Friday the local dentists will be in their offices, with closed appointment books, to receive and entertain any visiting practitioners who desire to call.

CHAS. P. PRUYN, Chicago, *President.* A. H. PECK, 92 State St., Chicago, *Secretary.*

PROGRAMME OF THE THIRTY-FIFTH ANNUAL MEETING OE THE ILLINOIS STATE DENTAL SOCIETY, TO BE HELD IN CHICAGO MAY 9 TO 12 INCLUSIVE.

The Annual Address of the Society by the President, Chas. P. Pruyn, Chicago; Report on Dental Science and Literature, A. W. Harlan, Com., Chicago; Report on Dental Art and Invention, J. E. Keefe, Com., Chicago; Paper, subject, "The Use of Noncohesive Gold," Geo. A. McMillen, Alton, Ill; Paper, subject, "Modern Manipulative Methods in Crown and Bridge Work," H. J. Goslee, Chicago; Paper, subject, "Bacteriological Investigations of Pulp Gangrene," Geo. W. Cook, Chicago; Photomicrographic Exhibit—Illustrating the Structure of Enamel with Reference to Cleavage and the Lines and Angles of Cavity Margins, F. B. Noyes, Chicago, D. M. Cattell, Ex-Com., Chicago.

LIST OF CLINICS FOR MAY MEETING OF THE ILLINOIS STATE DENTAL SOCIETY AT CHICAGO.

1. Dr. J. E. Aigley, Farmington, Ill. Gold filling.
2. Dr. Edward H. Angle, St. Louis, Mo. Principles in the diagnosis of malocclusion and adjustment of regulating appliances.
3. Dr. J. B. Brown, Bloomington, Ill. Bleaching Teeth.
4. Dr. H. D. Bull, Fairbury, Ill. Table clinic; making gold cusps and backing for porcelain facings.
5. Dr. F. H. Berry, Milwaukee, Wis. Electric appliances.
6. Dr. J. Campbell, Bloomington, Ill. Extracting live pulp without pain
7. Dr. A. W. Chenoweth, Atlanta, Ill. Gold filling, hand mallet and pluggers (Davidson patent as a starter).
8. Dr. J. W. Cormany, Mt. Carroll, Ill. Gold filling in the anterior approximal surface of an upper central incisor, using the Bonwill mechanical mallet No. 2.
9. Dr. J. T. Cummins, Metropolis, Ill. Gold filling in anterior teeth, using Rowan's incisual gold rolls, cohesion, with automatic mallet.
10. Dr. Charles C. Chittenden, Madison, Wis. Gold filling in bicuspid proximal compound cavity, with combination soft and cohesive gold foil, using matrix, in the mouth of Dr. A. H. Peck.
11. Dr. Levitt E. Custer, Dayton, Ohio.
12. Dr. Junius E. Cravens, Indianapolis, Ind. Cases of pyorrhœa alveolaris surgically treated.
13. Dr. K. B. Davis, Springfield, Ill. A new style of bridge work.
14. Dr. C. P. Dorn, Naperville, Ill. Setting Logan crown, bicuspid, with gold band.
15. Dr. S. Finley Duncan, Joliet, Ill. Clinic promised.
16. Dr. H. B. Farmer, East St. Louis, Ill. Will demonstrate Dr. J. H Blair's method of treating putrescent pulp cavity with iodoform vapor.
17. Dr. E. F. Hazell, Springfield, Ill.
18. Dr. Austin F. James, Oak Park, Ill. Immediate regulation.

19. Dr. F. B. Kremer, Minneapolis, Minn. Contour gold filling, bic uspid. Will start filling with noncohesive cylinders and finish with cohesive gold, using the saw to establish interproximate space.

20. Dr. S. W. Lakin, Eureka, Ill. The restoration of the lower third of a superior incisor or cuspid, using the screw system and Watts' crystal gold, packing gold with nonserrated instruments.

21. Dr. F. H. McIntosh, Bloomington, Ill. Gold filling in the distal surface of bicuspid or molar, using ivory matrix and S. S. White moss gold, or a cervical filling, using Hatch clamp.

22. Dr. Grafton Munroe, Springfield, Ill. Table clinic on some suggestions pertaining to the uses of hydronaphthol.

23. Dr. George S. Munson, St. Paul, Minn. Gold filling in bicuspid.

24. Dr. Edmund Noyes, Chicago. Will make a platinized gold corner on left central incisor, Dr. C. A. Kitchen, of Rockford, patient.

25. Dr. R. M. Pearce, Rock Island, Ill. Gold filling, hand mallet.

26. Dr. F. A. Roe, Burlington, Iowa. A short and accurate way of making a gold crown.

27. Dr. R. G. Richter, Milwaukee, Wis. Rope tin filling.

28. Dr. G. D. Sitherwood, Bloomington, Ill. Union of porcelain and gold in artistic bridge work; also the value of trichloracetic acid when used as an escharotic in preparing roots for the setting of crowns.

29. Dr. J. W. Shedd, Pontiac, Ill. Gold filling proximo-occlusal cavity in a bicuspid or molar, using Mason mallet.

30. Dr. J. M. Sprinkle, Nokomis, Ill. Oral surgery, and treating and filling of carious teeth, including various conditions of pulp canals; action of medicines.

31. Dr. William W. Shryock, Ft. Wayne, Ind. Removable facing for crown and bridge work, and applying the countersunk nut in orthodontia.

32. Dr. I. C. St. John, Minneapolis, Minn. A restoration filling in an incisor, with original cavity preparation.

33. Dr. C. H. West, Farina, Ill. Will place a proximal amalgam filling with step retaining extension, posterior cavity of upper first molar, using the Booth matrix holder.

34. Dr. Henry L. Whipple, Quincy, Ill. Will construct a Downie crown, using an electric furnace.

35. Dr. J. C. Widenham, Jacksonville, Ill. Will demonstrate how a rubber plate can be repaired with solder, quickly, neatly and substantially.

36. Dr. Eugene R. Warner, Denver, Colo. A method of anæsthetizing pulps for removal at one sitting.

37. Dr. E. K. Wedelstaedt, St. Paul, Minn. Gold filling mesio-occlusal cavity, in an upper bicuspid, demonstrating Dr. G. V. Black's method of preparing cavity. Gold will be packed according to the principles and method illustrated and advanced on page 537, 1897 *Cosmos*.

38. Dr. W. J. Younger, San Francisco; Chicago, Auditorium Hotel. Will clinic his specialties.

39. Dr. T. W. Brophy, Chicago. Oral Surgery with a number of Illustrations.

40. Dr. George T. Carpenter, Chicago. Will demonstrate his method of gum restoration, and will show patients for whom he has developed gum tissue.

41. Dr Calvin S. Case, Chicago. Will show cases in fracture, orthodontia, and artificial palates during process of correction.

42. Dr. P. J. Cigrand, Chicago. His method of root canal filling (by model or clinic).

43. Dr. J. N. Crouse, Chicago. The use of copper matrix set with oxyphosphate.

44. Dr. J. Austin Dunn, Chicago. Large approximo-occlusal amalgam filling, with perfect contact, without previous separation, using a hand matrix.

45. Dr. D. M. Gallie, Chicago. Compound proximal molar or bicuspid, moss fiber crystal gold, and finish with No. 30 foil.

46. Dr. T. L. Gilmer, Chicago. Oral surgery clinic.

47. Dr. Robert Good, Chicago. Treatment pyorrhœa alveolaris. Younger method.

48. Dr. H. J. Goslee, Chicago. Will demonstrate his method of carving cusps for crown and bridge work.

49. Dr. W. F. Green, Evanston. Will exhibit porcelain bridge in mouth of patient.

50. Dr. H. Alfred Gunther, Chicago. A secure and expeditious method of starting a filling by the use of crystalloid gold.

51. Dr. A. W. Harlan, Chicago. Pyorrhœa alveolaris.

52. Dr. J. E. Hinkins, Chicago. Removal of deposits, using a new set of Dr. Case instruments.

53. Dr. J. E. Keefe, Chicago. Replantation for the cure of pyorrhœa.

54. Dr. Garrett Newkirk, Chicago. Management of children in the dental chair, with special reference to the deciduous teeth.

55. Dr. John E. Nyman, Chicago. A porcelain bridge from start to finish.

56. Dr. E. A. Royce, Chicago. Gold filling, using Royce plugger points and rapid mallet.

57. Dr. L. K. Stewart, Chicago. Seamless crown.

58. Dr. G. A. Thomas, Chicago. Clinic in porcelain, etc.

59. Dr. J. W. Wassall, Chicago. Pyorrhœa.

60. Dr. J. S. Bridges, Chicago. Will demonstrate open-face crown.

61. Dr. Hebert, Chicago. Will demonstrate his method of making seamless gold crowns.

62. Dr. L. A. Edwards, Chicago. Will give something in porcelain work.

63. Dr. E. J. Perry, Chicago. Will prepare a root, and make a porcelain crown.

64. Dr. C. E. Bentley, Chicago. Will amputate the apex of a root for the cure of chronic alveolar abscess.

65. Dr. Wm. E. Harper, Chicago. Table clinic. (1) Amalgam fillings application of the matrix, instruments and instrumentation. (2) Transvers sections of filled cavities, showing anchorage. (3) Prepared cavities, and th instruments used.

66. Dr. W. H. Taggart, Chicago. Will clinic to be announced.

67. B. J. Cigrand. Logan crown with intradental band; using chloro-perch and oxyphosphate as retainers.

L. W. SKIDMORE, Moline, Ill.,
Supervisor of Clinics.

ASSISTANTS: F. B. Noyes, E. R. Carpenter, Chicago.

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ORIGINAL COMMUNICATIONS.

COSMOS AND EVOLUTION.

BY W. C. BARRETT, M. D., D. D. S.

A LECTURE DELIVERED BEFORE THE STUDENTS OF THE CHICAGO COLLEGE OF DENTAL SURGERY, FEBRUARY 20, 1899.

STENOGRAPHICALLY REPORTED BY W. N. SAMPSON.

(*Continued from Page 245.*)

Let us compare the scientific Cosmos with the biblical history of the creation as it is set forth in the Book of Genesis. Let us see if we do not find that the idea of the six days' work of the Creator as literally conceived is not all a mistake of the theologian —a misconception of the natural meaning of the terms used by one who had but a shadowy idea of the origin of this world. "In the beginning God created the heaven and the earth." When was the beginning? At the commencement of the Archæan time, the unknown age, the age of the inorganic. "In the beginning God created the heaven and the earth." That must be true; it must have taken infinite power to have created it. "And the earth was without form, and void." That is all. Our present solar system was "without form and void;" it existed as a nebulous mass in the heavens, "and darkness was upon the face of the deep." Darkness; there must have been darkness; there was nothing to give light. There was no sun, there was no earth, there was no moon, there were no stars. All that was to be existed as a nebulous mass. Darkness was upon the face of matter; all was chaos and deep night on the great deep. "And the spirit of God moved upon the face of the waters." That is, upon, throughout this

matter. Translate the expression as you will, it could but be the evolutionary spirit that was going on in the matter which had been created by God in the first place, and which was governed in all its various forms by the laws which He himself had laid down. That was the first day—the first great epoch; it was the Archæan time. Science teaches the same thing essentially.

"And God made the firmament, and divided the waters which were under the firmament from the waters which were above the firmament." And that was "the evening and the morning of the second day." What does that mean? It is that matter had been sufficiently cooled so that now there began to flow and gather together, and to crystallize and to aggregate into one mass the sun and the different planets as they slowly condensed and collected into assembled masses. That was "the evening and the morning" of the second day; the beginning and the end of the era during which these changes occured.

"And God said, 'Let the waters under the heaven be gathered together unto one place and let the dry land appear.'" Is not that precisely what I have been sketching out to you as the teachings of science? "Let the waters be gathered together." Let there be a subsidence into one place of the infinite vapors which have flowed throughout space, and let the crystallized minerals now begin to show their face above it, because sufficient of the heat has been radiated into infinite space, and that accumulation which we call the earth has sufficiently cooled for crystallization to begin. What could be more true, what could be more graphic, than that description of it? That was the third day.

"And God said, 'Let the earth bring forth grass, and herb yielding seed after his kind, whose seed was in itself, after his kind.'" Is not that exactly in harmony with what I have been teaching you? I said that the first organic cell must have been vegetable. It is here called grass. That is the common generic term used in the Bible for anything that is of a vegetable origin, where by the same authority we are assured that all flesh is grass. "And God said, 'Let the earth bring forth grass'"—organic matter. "The herb yielding seed, whose seed is in itself." To the junior class during the past winter I have given the classification of the vegetable kingdom, and I have said that it is divided into two great subkingdoms, the cryptogams and the phanerogams. The definition I gave you of the phanerogams is a plant which h

flowers, which blossoms and brings forth seed. The cryptogam is that which is without blossoms, and which multiplies or propagates by spores, by minute embryos. "Whose seed is in itself." Could I have said anything more graphic than that? When you comprehend the proper interpretation and correct construction of those phrases no language is more vivid than that here used. Cryptogams are the lowest orders of the vegetables. I told you that it is a basal truth that all orders and species have been developed from the single organic cell, up from the lower to the higher, and the bible teaches precisely the same thing. "Whose seed is in itself"—the lowest orders of vegetable life; the cryptogams, the fungi, the lichens, all these must have been the first to have existence. That was the third day.

"And God said, 'Let there be light in the firmament of the heaven, to divide the day from the night.'" That is, matter had now become sufficiently cooled so that the absence of the direct rays of the largest and yet intensely heated and luminous aggregation of matter constituted night for those that, because of their small size, had parted with so much more of their heat. Organic matter existed, and there was a night and a day. The earth no longer was a light to itself, but received illumination from the sun. It was simply an advance of the preparation of the earth for even higher organisms.

"And God said, 'Let the waters bring forth abundantly the moving creature that hath life, and fowl that may fly above the earth.'" What means this? Let us look at our diagram of classifications. Here it is*: The Silurian age—the age of invertebrates; the Devonian age—the age of fishes. "And God said, 'Let the waters bring forth abundantly the moving creature.'" What could this refer to except the Silurian and the Devonian ages? What can be referred to except the invertebrates that existed in the Silurian age and the fishes of the Devonian age? "And the fowl that may fly above the earth." This can but indicate the pterodactylia a little more developed. It does not say birds, but the generic term fowl is employed. These must have been the winged pterodactylia of the Triassic or Jurassic ages of Mesozoic time. Here I find it indicated in our classification. In Mesozoic time some of the reptiles developed a great spread of wing through the

*See page 242.

lengthening of the phalanges of the anterior extremity, and their connection by a membrane, flying as the bats do to-day—the pterodactyls with a spread of wing of twenty-five feet.

"And God created great whales, and every living creature that moveth, which the waters brought forth abundantly, after their kind." Great whales—to what does that refer? It must have been these other immense great reptilia under the generic name of whales.

"And God said, 'Let the earth bring forth the living creature after its kind, cattle and creeping thing.'" Cattle again is a generic term; it does not refer to our oxen and cows; it does not mean especially the ungulata; it refers, as it says, to "the living creature after its kind, cattle and creeping things." We have now reached the border land of the Mesozoic time and lap over into the Cenozoic, or later time. Of this the first, or Tertiary age, is especially that of the mammals, or animals possessing mammæ which suckle their young from breasts. From that first single organic cell, through the infinite cycles of time, with the constantly changing environments, there have been gradually developed higher and yet higher organisms, until we see in the Tertiary period animals which "bring forth" their young whose progeny are born alive—the mammalia, the highest class of organized beings. It is not to be imagined that in this Tertiary age the higher mammalia had all been developed, for it is not till a later date than man appears, and even when the Quaternary period opens man was far below what he is to-day, as now he may be greatly inferior in development to what he shall eventually attain. Through these cycles of time there has been a gradual evolution and each separate one may be considered as a Biblical "day," and in the different epochs some order of creation reached the point of sufficient differentiation to form a disinct order of "creation."

Finally, we reach the grand climax of the whole Cosmos, the order of creation. "And God said, 'Let us make man in our own image, after our likeness; and let them'"—why did he not say "let him?"—'let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth.' At this, the Quaternary epoch, creation has reached its highest mark, and a being was evolved with intelligence and wisdom and cunning enough to assume dominion over all the lower orders, and

in intelligence—not in physical structure, for the Supreme Being has not bodily organs—in wisdom, in comprehension, to be after the likeness of the Creator. "And God said unto them"—unto them, unto everything that existed—"be fruitful and multiply and replenish the earth, and subdue it." We have reached Cenozoic time, the Tertiary age, that of the mammals, and finally the Quaternary, the period in which man first exists as man.

Here are a few other striking quotations from the book of Genesis: "These are the generations of the heavens and the earth, when they were created." That is, when they came into being; when they first had existence. It does not mean, I take it, that they were special creations, but when they were first evolved, when they first became a distinct part of the creation. "And the Lord God had not caused it to rain upon the earth." How could it rain when matter existed in that tenuous form, and after the crystallization of the metals how could there be a rain when everything was enveloped in a vapor? "But there went up a mist from the earth and watered the whole face of the ground." How perfectly descriptive is the language employed. "And the Lord formed man of the dust of the ground, and breathed into his nostrils the breath of life." In the personified form what could more graphically express the true doctrine of evolution than that? Built up from the earth originally, through the vegetable, through the lower orders, until it finally reached the differentiation of man.

Biology teaches that the evolution of the human individual, the embryological and morphological development from the impregnated ovum is but an epitome of that of the race. There is no essential difference between the germ from which is incubated the homo, and that from which is hatched the bird or the beast. All life begins with the egg of the female, fertilized by the male. The higher organisms pass through precisely the same stages as the lower. At a certain period of development for the first time it is possible to determine whether it shall be a vertebrate or an invertebrate. Development proceeds a little further, and there is seen a minute differentiation which indicates its class—that is, whether it will become a reptile, a bird, a fish or a mammal. Another step and its order may be determined. For the first time it is apparent that it will not be a carnivorous animal, or an ungulate, or one of the insectivora, or rodentia, but will become a primate. A few more steps and the species may be determined

from the development, and the fœtus shows the differentiation of man, and not that of the monkey, the ape, or the lemur. Yet in none of the stages has it been either the lion, the horse, the hog, the monkey or the ape, although its development up to a certain point was identical with those. It has simply passed through the same stages with them, they stopping at a certain point and thence diverging in one direction, while man, through his own line of development, advances far beyond their limit and reaches a higher plane of intelligence and perfection. But man, like all other animals, commenced differentiation with a single organic cell, and like their's his racial history is upward. Nor is the earth yet finished. We live in the days of creation, and we may watch the constant miracle. We see evolution of species going on day by day. Every breeder of animals knows that his improvements in stock are due to the dominion of the law of progressive development.

This is something of the history of cosmos. But what about the modern doctrine of evolution? It is that there first was created a single organic cell, and that it was given the power to adapt itself to all the changing environments under which it could be placed. Immediately there commenced a modification of the surroundings, and to accommodate itself to them there was a change in the development of that single organic cell. There commenced a branching off from it as it developed its species under the variations of environment; it changed its organs and structure as the bears have altered in color, passing through the evolutionary process, becoming white in the North and black in the South. So matter went on modifying and varying and adapting itself to differing forms to altered environments.

The doctrine of evolution is not that tissue of absurdities so frequently preached and talked. It does not mean that man was descended from the monkeys; it does not teach that he was ever an ape, or a horse, or a dog, or a cat, or a long tailed rat, or anything else. It simply means that man from the very commencement of things has gradually developed under divine guidance into the highest of all created beings. It signifies further, that man is going on and on and on in all future ages, until the time shall come when he shall be, not a little lower than the angels, but their equal in intelligence, their equal in power—"equal to the angels." I speak thus rather from a figurative than literal standpoint, because ju

what an angel is I do not know. I cannot have any clear conception of such a being. (Laughter and applause.) I know that I have heard a great many individuals called angels, but I never saw their wings. When I was younger than I am now I sometimes fancied that I heard the rustle of their feathers, but somehow it always resolved itself into the "frou-frou" of silk or satin, or in some instances plain cotton. Now, having myself so far developed in sense, having so outlived the vagaries of youth, I can have no conception of a wing which will float anybody that grows out of a shoulder blade. It must have pectoral muscles for its movements, and they do not grow outside the scapula. Mind, I mean nothing irreverent in that. I think the word "angel" is used to denote a being of higher development, higher intelligence. Men and women both may yet develop into "angels," but what will be the peculiar differentiation, what the specially evoluted characteristics of the new order, is farther than my reason will reach or my imagination carry me.

What is the final truth of this matter then? God created the first single organic living cell, single in its structure, without organs, almost without functions. But immediately as the earth began to cool and as the circumstances began to change, it added to itself, it began to modify its form, to adapt itself to altered environments, to assume different organs, until finally it led off in one direction and became the crustacea, we will say; but at the same time here (indicating) it was branching in another direction, and it developed in the course of infinite ages of time, under these changing environments, under these altered circumstances, into another order, another class, and it became perhaps the birds. Here and here (indicating) it was adapting itself to other modifications of environments, and there was an alteration in its whole character, its whole nature, until it became the mammalia. Finally we had a single organization that commenced here and differentiated especially, changing faster than the others had, undergoing more rapid development, with higher intelligence, and under divine guidance, under the law of differentiation, which the great Creator himself had established, it reached the very summit of existence, and we call it man.

But was man ever a monkey? That is the misconception—the misrepresentation—the falsification that is the weapon with which ignorance and bigotry always attack an unwelcome truth. All

sprang from the same original organic cell, but with the same force and truth it might be urged that you and I were once negroes, because all sprang from the same aboriginal Adam and Eve of the biblical account. Man has come up through a development of his own. He has had nothing in common with the lower orders from the point of his divergence, from the common line of advancement to his present status. Up to this stage (indicating) all animals were epitomized in a single differentiation. Here commenced a variation of the subkingdoms, invertebrates and vertebrates. At this point may perhaps have been the inception of the differentiation of the classes of the vertebrates into the mammalia, the reptilia, aves, pisces, etc. And here again may have begun the mutations under which the environments that had induced the mammalian peculiarities were so altered that further differentiation finally ended in the ungulates, the carnivora, the cetacea, the primates and the other orders. Just at this time the animals possessing those characteristics of structure which distinguish the primates differentiated, one under Divine guidance being subjected to circumstances which eventuated in the earliest man, and other changes resulting in his congener species. Finally, the differentiated man, through climatic and other influences, has developed racial peculiarities, and we have the Negroes, the Malays, the Indian and the Caucasian. But the Indian was never a Negro, nor was the European ever the Malay. Springing from the same aboriginal root, each has developed through a line of his own.

God made man out of the dust of the earth—that is, out of the inorganic, through its successive organization into the vegetable cryptogams and phanerogams, the amœba, the jelly fishes and other invertebrate forms, the fishes and the mammals, being always out of a lower order into a higher, the inceptive point being the "dust of the earth," the inorganic matter as first called into being by the fiat of the Creator. Into him was breathed "the breath of life," when first conscious existence became an established fact.

That is the true doctrine of evolution. Darwinianism has a more restricted sense. The evolutionist believes that man has developed through, not from lower orders, through the exercise of laws unknown or revealed only in part. Darwinianism attempts to point out the stages, and the laws which have resulted in the evolution—through natural selection, the struggle for existence and the survival of the fittest. But he nowhere asserts that these are

the only factors, but simply that they exercise a predominating influence in development. The doctrine of evolution is not in the least dependent upon the truth of the conclusions of that great naturalist, but will still live, though natural selection should be proven a fallacy, and the survival of the fittest only a transparent delusion. Man has not developed from the lower orders of creation, but has through the ages metamorphosed in a line of his own. Other animals have developed simultaneously with him, according to the type of their energy and under the laws of their separate existence, but he has been placed under circumstances or environments which have made him the highest of all earthly beings. He has been singled out and under Divine guidance has constantly risen in the scale of existence until he has become "a little lower than the angels," a little short of the supreme type toward which he is tending, but his physical kinship with all the other classes of creation may be readily traced by the man who will recognize truth when revealed.

I have asked the members of this class before now, "What distinguishes man; wherein does he differ from all other animals?" The answer perhaps came "The man walks upright." Well, so does a hen. (Laughter and applause.) Another answer perhaps will be that man builds habitations. So do birds. Another one perhaps will give reply that man is a reasoning being. Did any of you ever have an intelligent dog? If so, you know that a dog reasons; all animals reason to a certain extent. I well know that man has a higher development, but I want something that specially distinguishes him. You may say man has a higher rate of reasoning. I do not know about that. I have seen some men who were a great deal bigger fools than some dogs. The theologian says, man has an immortal soul. Ah, gentlemen, we have gone beyond the teachings of science now; we have trespassed outside the bounds which we set for ourselves. We are to consider physics, not metaphysics. When we teach science, that is physics; when we speculate concerning morals and religion, that is metaphysics. I am always cautioning students not to confound physics with metaphysics; not to imagine that I attempt to teach any system of religion whatever; that is far out of my realm, beyond my sight and knowledge. I demand, give me something that specially distinguishes physical man; some structural peculiarity which no other animal has. I know of but one. It is that man alone has two hands

and two feet, and the opposing thumb is what distinguishes the hand. The animals that are our nearest congeners, the quadrumanous apes, have a physical structure that in some respects is more perfect than is ours. They have four hands, but they have no real feet, their posterior extremities not ending like ours in a complete plantigrade structure.

You know that all the mammalia have essentially the same bony structure. Even the cetacea, the whales and dolphins, either have their limbs developed into flippers or fins with the typical number of bones, or they possess rudimentary, undeveloped legs and arms. The lower mammals have four feet, either digitigrade or plantigrade. The number of fingers and toes may differ, but that does not change the essential facts. Some of the ungulates have one, some two, some three, some four and some five toes. The horse, for instance, has but one, while the ox has two, with two others that are rudimentary. Yet the exact number does not change the essential structure of either. The hog walks on the ends of his toes, while the bear walks on his flat foot, all the bones resting on the ground. Yet, with the exception of the number of toes, the structure of each is the same with that of man. Each in the fore limb has a humerus, a radius and ulna, with a varying number of carpal and metacarpal bones. Indeed, this is the typical structure of all vertebrates, for the bird has precisely the same bones in the wing that the mammals have in the fore leg.

I know then of no essential physical characteristic that distinguishes man save the opposing thumb on the anterior extremities alone. He is more intelligent as a species than any other animal, because he has developed further in that direction. The knowledge of the dog is a reasoning intelligence, just as positively as is that of man, but not in the same degree, because he has not developed in the same line. But he can run much faster, and digest food that man cannot; is better protected against the elements; has keener physical senses and more perfect organization in some respects, because he has differentiated in another line and under varying environments or circumstances. We can draw no line of demarcation between the life, the existence, the development of my dog and that of myself, except in degree. We can draw the line nowhere else. (Applause.)

What, then, is the grand summing up of the whole matter? What is the supreme lesson which we are to derive from the

teachings of science? It is the infinite littleness of man as compared with the whole creation. It is our ineffable conceit that leads us to the conclusion that the universe was called into being for the inhabitants of this earth, and if we carry the matter to its logical conclusion, for the Caucasian, for the American, for the inhabitant of the State of Illinois, for the citizen of Chicago, for me individually. Theologically, we are virtually taught that all the cosmos was specifically arranged for the Jew, for the Christian, for the Presbyterian, or Baptist, or Methodist, or Catholic, according to our own sectarian bias, and that an eternal creation is arranged in the hereafter for the special sect to which we may individually belong. The broader christianity which science teaches takes a higher, grander, nobler view, and recognizes God as the God of the Universe, and not the despotic ruler of a little realm of narrow minded, servile, sycophantic, cringing hypocrites, in the presence of a superior power, and despotic, arrogant, sanguinary bullies in our relations with those weaker than us.

Let us not imagine that we have yet reached the limit of human intelligence—that man has developed to the highest plane to which he may aspire—that he has learned all there is to be learned—that he has fathomed the depths of nature—that he has possessed himself of the most important of the secrets of existence. The citizens of a thousand years hence may look back upon these as the really dark ages, when man's nature was scarce raised above mere brutal instincts. Oh, gentlemen, gentlemen, until we can crush out a little more of the tiger which characterizes our present lives, until we have arisen from the bellies on which like the snake we crawl in the moral dust, until the rapacity of the vulture has been curbed within us, until the vanity and senseless chattering of the monkey is repressed, let us not pride ourselves too much upon our superiority to the less developed orders of nature. When man as a separate species shall attain to the dignity of the elephant, the courage of the cock, the faithfulness of the dog, the gentleness of the dove, the continence of the fish, and the sacrificing patience of the ox, let him be a little modest in his assertions. I know of no kind of animal that wages a war of extermination against its own species, merely to gratify brutish instincts, aside from man. I know of none which exhibit the savage ferocity of the human bully who fights to afford entertainment for its fellows, or the so-called naturalist, who seeks God's

rarer creatures only to exterminate them, who mercilessly pursues other animals that it may decorate its females with the blood and the bones, the feathers and the skins of other species developed through the operations of the laws established by the same great Creator. Let us be honest and admit that much of our boasted development has been in the wrong direction.

But I hope that in the future we shall leave yet further behind us the worser part of that which we are pleased to call our "brutish" natures. The progress that we have made will assist us to more rapid advancement in the future. With our mastery of some of the forces of nature we are only prepared for yet higher flights. We have but secured the tools, the implements, with which more swiftly to work out our manifest destiny. We have simply the door a little ajar, and we can peep through and begin to see something of what are the wonderful secrets of nature. Within the next generations—I do not know how many—man will have made such progress as we can have no conception of at the present time. Shall he stop now when he is just at the threshold of discoveries, when he is only commencing to comprehend the laws which govern nature, and has but begun to acquire facility in the use of the tools with which he can work out his great ideals and his great ideas? No. I tell you that man is just at the outset of his great career; that he shall go on, and on, and on, until he reaches a point of power, a point of intelligence, a point of knowledge of which, as I have said, we can at the present time have no possible conception. The man that lives a hundred years hence will see—I know not what. We think that we have made great advances in the development of electrical science, for instance; I do not know. Man a thousand years hence may be flying on the wings of the wind through empty space; he may ride the sunbeams; he may bestride the lightnings and fly from pole to pole. It may be imagined a precarious kind of locomotion, but perhaps man will then be so developed that he will be able completely to govern it.

What is to be the end of all this? We have a right to inquire. Are the heavens to be rolled together like a scroll and the elements to melt with fervent heat? It cannot be. The man who wrote that did not know what he was talking about, or he was so carried away by the fervor of his poetic fancy that he was not responsible for his own fervid imaginings. He was not a scientist. The Bible is a book of morals; a book of religion. Do not take it as a text-

book in science; take it for what it is intended—the highest expression of religious thought, of religious conception, of conscience, of ethics, but do not attempt to wrest it from its proper sphere. Joshua commanded the sun to stand still, and so can I do it to-morrow, and I suppose it will obey just as much in one case as in the other. Had the revolutions of the planets ceased for a moment, the cycles would have been rolled back and all nature must have been so revolutionized that utter destruction would have come to the universe. It is a figure of speech. Do I mean to assert that the Bible is untruthful? No, not by any means. It is not a work on science, and that is the mistake many people make. They accept it as literally true, and give credence to the most preposterous statement, while denying the plainest expressions of the teachings of God's law. Science is what? Demonstrable fact. Religion is what? Metaphysical speculation. I do not mean speculation in the sense of guesswork, or uncertainty. It is metaphysical reasoning. The one must support the other or one of them is a lie. Is religion a lie? No, we know it is not. Is science a lie? We can demonstrate its truth. You see there is no conflict between them when viewed from the proper standpoint.

What shall be the end of all things? The earth is growing cooler, the sun is losing its heat. The moon, which is so much smaller, is even now utterly dead. No living thing exists upon it. Even the very oxygen of the air, which once existed, has been absorbed. The mercury in the thermometer might sink there to hundreds of degrees below zero when the sun does not shine. No life is there, but everything is in a state of frozen nothingness. That is what this earth will become. The sun itself shall lose its heat, and the day shall come when the last ray shall emanate from it and it shall sink beneath the gates of the west, a dead orb.

It is estimated that the temperature of the sun is now about 10,000 degrees Fahrenheit. Another estimate places the absolute zero, the temperature of the interstellar space, at 500 degrees below zero. Probably the sun was once very much hotter than it now is, but taking its present estimated temperature—10,000 degrees—and placing the present temperature of the surface of the earth at 60 degrees, it will be seen that 9,940 degrees has been lost since the "beginning," and that less than 600 degrees remain between the present temperature and the absolute zero of the realms of unoccupied space. Air becomes liquid at 312 degrees below, so

that no adaptation to changing environments would enable any organic thing to live at that temperature, for there would be no air from which to derive oxygen. The earth then would be a dead planet. Nothing could possibly exist upon it, and your tombstone and my monument would be frozen up together. (Applause.) That must be the end of all things. That is in accordance with the law of science; it is in accordance with the law of religion; it is in accordance with the law of nature. It is constantly growing cooler. Those people who insist on it that the seasons are longer and warmer than one hundred years ago are badly mistaken. But understand this, gentlemen: In the development of all these species a million years are as nothing; they are but as the tick of the pendulum; they are but as the swinging of the lamp which taught Galileo the real law of motion. I do not know how many millions of cycles shall elapse before this world becomes uninhabitable, but it is as inevitable as death is inevitable to every organic, living thing. What shall be the end of inorganic matter no man can say. I suppose I know as much of the unknowable as any man; there are no avenues of information open to any one that are not open to me; I can read any book that he can read, provided I know the language; I can reason cogently, and others can reason cogently; I may not agree with them on the uncertain minutia in certain matters, but on the great truths of religion, the great laws of creation, the very basal facts upon which the cosmos must rest, the theologian and I perfectly agree. "In the beginning God created the heaven and the earth, and the earth was without form and void;" that is indisputable to the scientist; it is absolutely accepted by the theologian. It is just as positively determined that in the end all things must have radiated their heat, their life, their energy; that all living things, all organic matter, shall go back to the earth, to the dust from whence it sprung, and this earth will turn again to that from which it originated—the inorganic.

Gentlemen, these are the facts as I apprehend that science teaches them. I can only give you the general conception, the leading ideas, of what the doctrine of evolution comprises. It simply declares that "In the beginning God created the heaven and the earth, and the earth was without form and void," and further that when the world was sufficiently advanced, He created the first organic cell, endowed it with the two properties of which

I have spoken, the ability to perpetuate itself and to adapt itself to changing environments, and through all those environments, through all those changes, the same law of the great eternal Creator which called man into being has ruled and governed in the evolvement and in the evolution of all the various species of animals which exist upon the earth to-day.

NEURALGIA.*

BY C. N. JOHNSON, L. D. S., D. D. S., CHICAGO, ILL.

Neuralgic affections connected with the fifth pair of nerves are frequently referred to the dentist for diagnosis and treatment, and it would seem necessary for him to study somewhat carefully the varying manifestations of the trouble, so as to be able to meet it intelligently and—if in his province—give the patient relief. The present paper has no reference to those complicated and persistent cases calling for surgical interference occasioned by a growth along the nerve trunk or to a bony development at some foramen of exit whereby the nerve is kept constantly irritated, and nothing short of an operation can ever give hope of relief.

The phases of the disease selected for consideration at this time relate to those cases connected with dental irritation and to another type of the disturbance which seems to have been especially prevalent during the past winter, arising apparently from exposure or from some peculiar atmospheric condition.

When a patient applies to the dentist, suffering from pain in the fifth nerve, particularly if it is in either the superior maxillary or inferior maxillary divisions, it is his duty to examine carefully all of the teeth and try to determine if it be of dental origin. It is sometimes difficult to locate the cause of these neuralgias, but if it is connected with the teeth at all it will usually be found to consist in an irritation produced by pulp nodules or from a suppurating pulp. Pulpless roots of teeth are not often the direct cause of neuralgia. They may lead to abscess and caries of the bone, but they seldom induce reflex disturbance. Neuralgia from pulp nodules is the most difficult affection to locate of any of those under consideration, its manifestations being more or less vague so far as any intelligent interpretation on the part of the patient is

*Read before the Odontological Society of Chicago, April 18, 1899.

concerned. Its history is ordinarily one of gradual development rather than a sudden, spasmodic attack, and it may run for some time before the patient is impressed with its seriousness. It is usually ushered in with a sense of discomfort on the affected side, which gradually increases and is accompanied with shooting pains, becoming more and more pronounced until the patient is obliged to apply for relief.

It may run to this stage without sufficient location in the teeth to arouse the suspicion of the patient that it may be of dental origin, and, in many instances, the case is referred to the family physician for treatment. It is only after he has exhausted all of his remedies without avail that, in desperation, he sends the patient to a dentist for examination. Even then the patient is by no means certain of instantaneous relief, because of the diffiulty of locating accurately the affected tooth or teeth. The certain diagnosis of pulp nodules is one of the most difficult problems in dental pathology. The only guideboard the dentist has is the history of the case, together with a possible reference of the patient to a certain region of the mouth where the discomfort seems greatest. It is seldom that the pain is so definitely localized that the patient is able to point to any one tooth with a reasonable degree of assurance and say that this is the seat of the trouble. Even where such reference is made, the dentist must be cautious about drilling into the tooth on the first impulse, because of the significant fact that on the very next visit to the office the patient may locate it in an entirely different place. Neither will tapping the teeth individually with the end of an instrument always locate the difficulty. The teeth are not necessarily sensitive to percussion as the result of nodular growths in the pulp. Probably the test which comes nearest to being decisive is to subject the teeth one after the other to extremes of temperature. If a tooth is found on the affected side which responds more readily than the others to the application of heat or cold, and particularly if this varying temperature produces the kind of pain complained of in the neuralgic attacks it will ordinarily be justifiable to drill into the tooth thus responsive and destroy the pulp. The distinctive features of diagnostic value in this affection are its gradual development and its persistent continuation in the face of internal remedies, together with an increasing impression on the part of the patient that it must be connected with the teeth.

The only remedy is to persevere in the search till the affected tooth is found and destroy the pulp and fill the canals. It sometimes happens that more than one tooth is affected, and, when such is the case, it involves a patient following up of the trouble till all of the diseased teeth are treated. This is usually a slow and nerve taxing process, and the entire procedure of managing a case of neuralgia brought about by nodular growths in the pulp is one of the most discouraging and difficult problems presented for the dentist's solution.

Neuralgia from a suppurating pulp, while more easily diagnosed and more readily brought under control, is also sometimes confusing in its manifestations. It is likely to be located by the patient in an entirely different tooth from the one really causing the trouble, and the dentist must be on the alert and make a careful search before attributing the cause to any particular tooth and drilling into it. The disturbance often arises in a filled tooth as the result of a pulp suppurating under the filling, and when many of the teeth on the affected side are carrying large fillings it is sometimes difficult to locate it. The surest test in this case is the heat test. Hot gutta-percha applied to the teeth, one after another, will ordinarily end in the detection of the affected member. The heat may cause pain in each of the teeth touched, but usually when the one with the suppurating pulp is reached, the patient will recognize it as the same character of pain occasioned by the neuralgic attacks. It is different from the ordinary sensibility of a tooth to extremes of temperature, and the patient can almost invariably make the distinction.

But even then the reference on the part of the patient is often to the wrong tooth. For example, when a molar with a suppurating pulp is touched with the heated instrument or with hot gutta-percha the patient is likely to refer the pain thus occasioned to a bicuspid. Some extreme cases of this form of false impression have been noted in practice. For instance, a gentleman applied to the essayist on one occasion suffering from neuralgia on the left side of the face, running along the lower jaw and taking a course upward over the temple, where it appeared to be most pronounced. On inquiry as to the principal seat of the pain he invariably passed his hand up over the temple, but said that it evidently had its origin in the left lower first bicuspid. This tooth had a medium sized amalgam filling on the disto-occlusal surface, which seemed to be

in good condition and not large enough to endanger the pulp; but his emphatic declaration that this was the tooth, and no other, finally led to the removal of the filling—a mistaken procedure on the part of the operator without a more careful examination of the other teeth on the affected side. During the drilling of the filling for its removal he repeatedly affirmed that this was the aching member. When the filling was out there was no indication of a pulp exposure, but on the patient's conviction that this was the seat of the trouble, an application was made for the destruction of the pulp. During the next few days the patient still suffered, but, according to his statement, not so much as before the filling was removed. After the pulp had been taken out and the canal and cavity filled, the patient seemed to get relief for a day or two, after which he returned suffering again and still referring the trouble to the bicuspid. At this stage I did what I should have done in the first instance, viz., examine all the teeth on that side. Nearly every tooth had a filling in, but none was sensitive to tapping with an instrument. The application of heat to each tooth consecutively brought little response till I came to the third molar, which had an oxyphosphate filling in it. The moment the heat touched this tooth the patient winced perceptibly and clapped his hand up to his face in a paroxysm of pain. "There; that's it," he exclaimed. "I told you all the time that that was the tooth," and he placed his finger on the first bicuspid. I handed him the mirror, and showed him the tooth I had touched, but he was incredible.

"No, sir," said he, "it is not that tooth away back there at all. Here is where the pain is," and he again pointed to the bicuspid. It is needless to say that on removing the filling from the third molar I found a suppurating pulp, and an application for its destruction brought immediate end to the pain in the bicuspid. But so vivid was the impression on his mind that the bicuspid was the seat of the trouble that to this day whenever he applies for service he invariably taps this tooth with his finger and refers to it as the fellow which gave him so much pain on that occasion.

These reflex disturbances are exceedingly misleading, and the operator must be very cautious about accepting the patient's impression as to the precise location of the trouble. When several teeth are filled on the affected side they should all be carefully examined by the heat test before any decision is made as to which

tooth is at fault, and it would sometimes seem that the patient's previous impressions should be almost wholly ignored in arriving at a diagnosis.

But the chief purpose of the present paper is to call attention to a form of neuralgia of the fifth nerve which seems to have little or nothing to do with the teeth as a causative agent and yet which the patient quite frequently refers to the teeth. So many cases of this character have been brought to the attention of the writer during the past winter that he is almost led to the conviction that there has been some atmospheric conditions which conduced to its prevalence. Whether it is a manifestation of grip or whether it is simply local on account of exposure would sometimes seem difficult to determine. It is so variable in its symptoms that it is impossible to systematically describe it and yet it is something different in its behavior from anything previously encountered in practice.

The recital of a few cases may throw more light on it than an extended description :

A middle-aged lady applied for relief, complaining of trouble in a left lower second molar with shooting pains extending up to the temporal region. The tooth had a large amalgam filling in it with a history of the canals having been filled by a careful, competent operator six or seven years ago with no subsequent trouble till now. The symptoms were not those of pericementitis, and I did not feel justified in removing the filling. I counseled care against exposure and dismissed her with instructions to consult her physician if pains in the temporal region continued, but to return to me in case the tooth became sore on pressure. The next day she reported with complaint of a disturbed night's rest and the statement that the second molar had become sore. On careful examination I could not yet convince myself that there was any pericementitis or in fact any local disturbance around the tooth which would justify the removal of the filling. I applied a counterirritant to the gum—equal parts aconite and iodine—which she said gave relief, and instructed her to see her physician in case of further trouble. She demurred somewhat about consulting her physician or about taking anything internally for the trouble. The next day she reported again locating the pain and soreness this time in the lower first molar, which also contained a filling and had living pulp. The soreness complained of was more in the nature of a lameness of the tooth than a definite inflammation and I was

more convinced than ever that the teeth had nothing to do with the cause of the trouble. I so informed her and we decided to do nothing in the way of removing the fillings. This decision was fortunate. In a day or so the symptoms subsided and she has had no further trouble, the pulp remaining alive and apparently healthy in the first molar.

Another case was that of a gentleman of sixty. He was due at my office for his periodical and usual examination of the teeth, but instead of coming himself he sent his physician, who reported that the patient had been confined to his room for several days with neuralgia. The physician had administered the usual internal remedies with apparently little relief, and at this stage the patient became convinced that the trouble was connected with the teeth and wished me to call at his residence and make an examination. I did so and found the gentleman in bed much depressed with the suffering he had undergone. On inquiry I learned that the pain had started in the temporal and parietal regions and had been intensely severe over the entire side of the head and face, finally locating apparently in an upper second molar on the affected side. The patient insisted that the tooth was now the seat of the whole trouble and wanted it extracted. An examination showed the tooth slightly loosened and sore, but without that characteristic and unmistakable evidence presented by a tooth with active pericementitis leading to abscess. There was a small filling in it, not large enough to implicate the pulp. For twelve hours preceding my visit the patient could not tolerate in the mouth any liquid with a temperature even at a few degrees above the normal temperature of the body, and said it was especially distressing if it came in contact with this particular tooth. I counseled against extraction, and as a temporary expedient suggested the domestic remedy of a roasted raisin split in two and the freshly cut surface applied to the gum around the affected tooth. This was to be used as hot as the patient could tolerate it, and allowed to remain on one hour followed by a fresh one if the pain still continued. In response to his urgent request I promised that if he got no relief by the following day I would return and extract the tooth; but I heard nothing from him for two days, when his wife called at my office and reported that almost immediately on the application of the raisin the pain and soreness began to subside and he had experienced no further trouble. In a day or two he came to the office himself and

as he expressed it there was no indication that he had ever had any pain. There was not the slightest soreness in the tooth or anything apparently out of the normal.

Another case with entirely different manifestations may be noted as an interesting and peculiar one. A young lady whose teeth had been under my care for years reported one day complaining of some disturbance in the region of the right upper molars and bicuspids. I made a careful examination but could detect nothing wrong. Nearly every tooth, was filled, but there were no large cavities and no history of pulp exposures. She failed to locate the trouble in any one tooth, and I dismissed her with the impression that the trouble was merely temporary and probably due to exposure during changeable weather. I told her to report at once if the pain seemed to become definitely located or if it continued. In two days she came into the office with the most alarming symptoms. The entire right side of her face was swollen almost out of countenance. The right eye was nearly closed and the tissues below it badly discolored. She pointed at once to the first upper molar and said that there was no mistaking the seat of the trouble this time. I found it somewhat elongated and sensitive to pressure, and concluded that the pulp had died and an abscess formed. I immediately drilled into it only to find a perfectly normal pulp without the slightest indication of complication of any sort. She requested me to destroy the pulp, which I did. The swelling in the face subsided almost as rapidly as it had developed, and she has had no further trouble.

The last case presented for your consideration has been the most persistent, and, to me, the most puzzling of any I have ever encountered. Some time in December a young lady was sent to me by her uncle, a physician, for attention to her teeth on account of neuralgia. She located the trouble in a lower second molar. She said it was sensitive to impressions of all kinds—heat, cold or to the touch. There was a medium sized amalgam filling on the occlusal surface. I removed this, thinking it might be deeper than it appeared and might approach the pulp, but I found a very shallow cavity, with no possibility of pulp disturbance from this source. I at once placed a cement filling in the cavity to await further manifestations. In a few days she reported with a statement that the pain was now in the first molar. This tooth had a cement filling on the disto-occlusal surface, and I removed this, the patient

averring all the while that the tooth now being operated upon was beyond doubt the affected member. The filling was somewhat large, and though the cavity was so situated that I could not see into it perfectly, I concluded that there had been a close approach to the pulp when the tooth was filled, and that in all probability it was suppurating. I accordingly made an application for its destruction, which I now believe to have been a mistake. This was followed by the usual treatment and filling of the canals, the patient at all times certain that the tooth being worked upon was the cause of her neuralgia. After the tooth had been filled there was a cessation of the neuralgia for a short time, but in a week or so she came again with the report of a terrible night's suffering, and clamoring for relief. This time she pointed to an upper second molar, which had a small amalgam filling on the occlusal surface.

I told her that I felt certain the trouble was not induced by any of her teeth, but she seemed so positive that all the pain was in the upper molar that I finally removed the amalgam filling only to find a small cavity without complications. I inserted a cement filling and instructed her to go back to her uncle, the physician, and tell him my conviction that the teeth were not implicated. I advised that if the trouble continued he should prescribe some internal remedy, but she said he had refused to do this under the impression that the teeth were at fault. This attack passed away in a day or two and all went well for a week or more, when she came again with the same story, locating the pain this time first in one tooth then in another, but finally deciding that the lower first molar was the main offender. But in this she compromised her impressions by stating that extremes of temperature on this tooth brought about the paroxysms of pain. This in a pulpless tooth recently filled was scarcely tenable. I again insisted that the teeth were not at fault, but she and her uncle were both positive they must be. I applied to the gum around the pulpless tooth some aconite and iodine, which she immediately said gave relief. In another week she was back again and referred me to the upper first molar, a sound tooth. This seemed sensitive near the gingiva and whenever the explorer touched it she flinched and protested that this was the tooth. On a careful examination of all the teeth of the affected side I found a very small cavity on the proximal surface of the first upper bicuspid. I opened it up and began

excavating it. Her first exclamation was, as it had previously been, with the other teeth, "There! that is the tooth." I found a very small cavity and filled it with cement. This is merely a meager outline of the interesting time I have had with this patient at intervals all winter, and I am firmly convinced that the teeth have not been at fault at all. I attribute the difficulty to exposure and to the unfavorable atmospheric changes that have been so pronounced during the past few months. I fully expect that when the settled weather of spring has come and the incessant round of balls, receptions and parties which she has been attending this winter are over, she will have no more neuralgia.

In fact, I cannot escape the impression that with most of the cases I have had this winter—and I have had many of varying degrees of severity—the chief factor in the causation of the trouble has been exposure. A cold wind blowing for any time upon one side of the face or any exposure to draught in a heated room, especially in the unsettled atmospheric conditions of the past winter, may well be held accountable for neuralgic troubles. The particular feature of the affection, as it has come under my notice this season, is the persistency with which patients have referred it to the teeth when these organs have not in any way been at fault.

Self-culture.*

By Alton Howard Thompson, D. D. S., Topeka, Kansas.

Civilization consists not in the material things of life. We live in an age of the barbarous plenty of physical luxuries and we call them blessings. We are chained to the earth by materialistic views of life so that we have lost sight of the great possibilities of intellectual and spiritual existence, and are of the earth, earthy. We are too much concerned with the overestimated questions of "what we shall eat and what we shall drink and wherewithal we shall be clothed." Our cares and worries over material things and the disappointments connected therewith, bring about a pessimistic view of life that is unworthy of us in this favored age. The commercial estimation of life that is all about us has a most depressing effect upon our higher aspirations. It is accountable for many of

*Doctorate address delivered before the Northwestern University Dental School.

the degrading factors of life in our day, and yet this spirit has been present in man in all ages. The oldest writers bewailed the degeneracy of *their* times because men were wholly given to avarice and vulgarity. The fact is that the selfish and avaricious spirit is the normal condition of man, civilized or uncivilized, and is manifested in the lowest savage with the same characteristics as in his civilized brother. It means that we are little advanced beyond uncivilized man in the main motives of life, for they are still base. Prof. Jas. Brice tell us in regard to ourselves (in his "American Commonwealth") that "The unrestfulness, the passion for speculation, the feverish eagerness for quick and showy results, may so soak into the popular mind as to color it for centuries to come. These are the shadows that to the eye of the traveler seem to fall across the landscape of the great West."

What we need to combat the effects of this all pervading death damp, to escape the vulgar homage paid to mere luxury and things grossly material, is to cultivate a taste for the higher things which go to make up the intellectual and spiritual life. We need lower living and higher thinking. We need to look more to the things of the soul than of the body. To that end we would desire to instill into these young people going forth to fight the battle of life the inestimable value of self-culture in the things that go to make the higher life.

And first as to the word culture. This word has been subjected to much abuse and has come into too general use for the expression of a vague conception of general education and refinement. The popular conception is that it has to do with mere learning and manners. A person is said to be "cultured" or "cultivated" who has a miscellaneous assortment of information and can talk glibly upon any subject, and the specialist who knows but one thing is a mere "crank." The cultured man is thus one with all around information and showy manners.

But let *us* look deeper than this superficial conception, and t begin at the beginning to define between culture and knowledge, fo culture is not mere knowledge nor the facility of imparting knowledge. One with deep insight has said that "True culture is not wha we know, but the *flavor* of what we know"—the flavor that breathes benediction upon life. It is the spiritualizing effect of knowing th best things of life, which leads to the enlargement and beautifying o the soul. It is the spirit of all that is best and most beautiful i

literature, art, science, nature, mankind, which contributes to the growth of the inner life. It is that which brings the soul into contact with the infinite and lifts it into spheres unknown to vulgar worldlings. For true culture comes by grace, like religion; and like religion, it does not matter *how* it reaches the soul, just so that it *does* reach it. To more clearly define our meaning, let us consider the triad—knowledge, education, culture. We find that knowledge awakens the mind and instructs it concerning the things around it. Education is the sculptor of the mind, drawing forth its powers and fashioning it into a thing of beauty. Culture uplifts, beautifies and spiritualizes the powers of the mind, heart and soul. These three may be associated together, which is most happy, or they may be found in pairs or alone in different individuals. They are not necessary to each other's existence. For there are men of knowledge who have neither education or culture. There are educated men who are without knowledge or culture, and again there are others who are cultured who have neither knowledge nor education. These propositions may seem paradoxical, but the proof is to be found in individuals whom we all know of each class.

"There is many a savage in gown and stole,
And many a sage in hodden gray."

It is popularly assumed that college graduates and persons of scholarly attainments are necessarily cultured. But this is not always the case for we have all known and suffered at the hands of the educated boor. Of such it was that Horace Greeley once said, "Of all horned cattle, deliver me from the college graduate!" Better a backwoods education and culture therewith, than university degrees and a vulgar estimate of life. We would not detract from the value of a college education with all of its cultural possibilities. It is beyond estimation when properly used, and when education, knowledge and culture are combined the result is most fortunate, for of such are the salt of the earth.

But the true culture that is most uplifting and that abides with the soul, is that which is obtained by individual effort—education or no education. For this reason the best culture is to be obtained from books by systematic reading. Knowledge of men, of the world and of nature may be gathered by observation, but the widest experience of the race is recorded in books which the best genius of all the ages has bequeathed to us. The heart life of man-

kind is found pictured in books, and the heart life is the true life. Therefore it is to books and reading that I would especially direct your attention for the purposes of self-culture and the cultivation of the higher qualities of the mind and soul. Reading is, in a sense, a nutritial necessity to the mind, as food is to the body, for which it should always be hungering and by which it should always be growing. Rules for reading are of little use, for reading, like love in a proverb, "goes by liking," and is mainly a matter of taste. We are all limited by education and burdened by the accident of taste; and so readers, like books, are not all alike. There may be no message at all in a book to one reader, which to the other may be the means of awakening a new life. All reading tends to mental growth of some kind, either good or bad. Of course, we ought to avoid pernicious literature, just as we would avoid poisons or indigestible foods—that goes without saying. It follows further that we should read good books, but the *kind* of good books will depend upon individual taste. In seeking the source of the highest culture we are confronted by the select list of the best books of the best writers of all ages and times. Those alone on whom, as Daudet says, "Has descended the divine spark which set aflame the fires of genius." There is no mistaking the glorious company of the best writers whose masterpieces have survived the winnowing winds of time. These are the high priests of literature, from whom are to be drawn the best and truest culture. Therefore, make the great souls of the world your constant companions and you will have princes and kings for fellows and in associating with greatness there is true uplifting for the humblest soul. Shun mediocrity in men and matter, for the soul is as easily pulled down by evil association in culture as in morals. It was grand old Col Newcomb who said, "I read Boswell and Don Quixote and Sir Roger de Coverly because I like to be in the company of gentlemen." Prof. Nash has said that "As regards the foundations of culture, Plato and Aristotle are nearer to us than yesterday's newspaper. Isaiah and Lincoln are thousands of years apart in chronology, but in the elements of culture they live within the same day."

In your own beautiful public library building there are some artistic panels in which selections are given from various ancient and modern writers, upon the value of books and reading for the encouragement of youth in the pursuit of the best culture. For

instance, this from the Egyptian: "I will make thee to love literature as thy mother; I will make her beauties to pass before thee." From the Vulgate (Romans XV., 15), "Whatsoever things were written afore time were written for our learning." From the Persian, Omar Khayan:

"They who by genius and by power of brain,
The rank of man's enlightenment attain."

From Plutarch, "The wisdom which sages would not give to kings, is found written in books." From Milton, "A good book is the precious lifeblood of a master spirit, embalmed and treasured up on purpose to a life beyond life." From Isaac Barrows, "He that loveth a book will never want a faithful friend, a cheerful companion, an effectual comforter." In the beautiful rotunda is this bit from Addison, "Books are the legacies that a great genius leaves to mankind which are delivered down from generation to generation, a present to the posterity of those who are yet unborn." These are appeals that the genius of all the ages makes to the youth of all the ages, that they may desire to know of the best that has been written in all the ages. Even the old Egyptians had for an inscription over the portals of *their* libraries, "For the healing of the soul," recognizing then that reading vitalizes the mind and makes strong the whole man. If the student will but listen reverently and imbibe freely he will be strengthened within and armored without, and it is the spirit of this study that makes him better and wiser.

And this culture in its truest sense is not exclusive; it is not confined to the favored few, for as some one has said, "Culture can never be the real, downright enrichment of life that it ought to be until men have ceased to think of it as a luxury. It is just as widely open to the poor as to the rich. It is not a question of privilege but merely of making the most of what you have. The improving of the mind by contact with the best that has been thought and done in the world is quite as much open to the man of limited opportunities as to the one of great opportunities. The test is the desire for it and the intelligence to take it."

For our more convenient consideration, let us classify general reading under three heads, first, the shop, second the hobby, and third the imagination. Under the first head, reading for the shop, is to be included the books and literature of our calling, from which we learn the principles and practice of the vocation by

which we earn our daily bread. This is mere "pot boiling" knowledge, of course, but by it we learn to serve our fellow man, and this is good and noble. Every man who is learned and skillful in his profession is useful in his place and the world has need of him. This reading is elevating in its way and brings a sense of mastery to the earnest, studious man. It confers a dignity that is uplifting and a culture that is inspiring. Therefore, this reading should be cultivated, not only for its bearing on our daily work, but for the spirit of it, which is a true culture.

Under the second head, the hobby, we would include that avocation which is outside of the daily grind, which serves as a plaything for the mind and a refuge from "the cares that infest the day" and the routine of the shop. Such reading brings into exercise a different set of faculties, for the hobby serves as a sort of buffer to ease the jolts of life's pathway. Dr. Holmes has said that "A love for something and an enthusiasm for something make life worth living." Love, as you know, is essential to the happiness of the heart; and on the same principle, enthusiasm is essential to the happiness of the mind, and for the same reason—because it excites pleasure and stirs the emotions. Anything that will provoke these emotions and "warm the cockles of the heart," should be cultivated as a hobby; anything that is outside of the daily grind, any branch of literature, art, science, nature, will serve for such a purpose. Of course, the men who devote their leisure time to a hobby, the world calls "cranks;" but they drink of the pleasures of enthusiasm and live in an atmosphere that the blind worldling knows nothing of. Therefore get thee a hobby, a something to play with, to beguile thee from the cares and burdens of life. This hobby and the literature that is inseparable from it will have an inspiring and wholesome effect upon the mind.

But it is in the third field, reading for the cultivation of the imagination, that we find the greatest aids to the development of that true culture which is as the very life of the soul. In this field we find the greatest creations of human genius and the best reading for the development of the imaginative powers. It is not the mere finish of the building of literature, it is the building itself, for all that precedes it is but as the substructure. The things of the imagination are the most far reaching and permanent in their influence, for the material things of life are but as the passing of a

day. The things of the imagination live, the so-called practical things fade away.

"For a dreamer lives forever,
But a toiler dies in a day."

The true life is to be found with those who have created imaginative literature, for therein has the greatest genius of our race exercised its powers. Therefore, it is best to live with the poets and the masters of romance. Their works are less of the earth and more of the spirit of refining and rerefining that makes for the truest culture. We will there gain an insight into that larger intellectual life which expands the soul. Felix Adler has said that "Much of the selfishness of the world is due, not to actual hardheartedness, but to lack of imaginative power." The roll of the names of the imaginative writers includes the greatest genius of all the ages, from Homer to Shakespeare, from Shakespeare to Kipling. What a list there is, what wonderful things they have given us! To these I would commend these young people and urge them to cultivate the masters of the imagination to the end of attaining that true culture which will fill their lives with a glow and redeem them from utter desolation.

The soul, unlike the body, does not grow rapidly to an age of maturity and then begin to decline and disintegrate as it hastens toward final dissolution. On the contrary, its life is a perpetual evolution, an unfolding and an unfolding, "for it doth not yet appear what we shall be." It is said that when finishing the magnificent bronze doors in the capitol at Washington that the artists continued to chisel and carve the intricate and beautiful moldings until the doors were taken away from them, never giving up beautifying their work so long as it was left in their hands. So it should be with the soul. We are at work upon our souls, carving and molding them, for better or for worse, and our work shall last through all eternity. Should we not, therefore, make our best endeavors to beautify them to the best of our ability before they are called home by their Maker? If there be a life after death, then it becomes us as the highest duty of this life, to prepare the soul for the eternity that is to follow. For this reason religion is a real culture, for it cultivates the spiritual qualities of the soul in preparation for the larger spiritual life hereafter. So, too, all culture is "for the healing of the soul," and everything that is good and pure and beautiful contributes to its growth.

Life is not, as the Buddhists would teach us, a hideous blunder, only to be got rid of. Life is essentially great and contains the germs of vast possibilities, not only for this existence but for the hereafter. Whatever it may be here, there is, as Robert Louis Stevenson says, "A helmsman at the rudder, called God," and it cannot go wrong. There is a destiny even in human affairs, for where we are and what we are is as much a part of the Divine purpose as the place of our system of worlds in the great universe of God.

Therefore, have faith and take life bravely. As Ik Marvel says, "The man who believes well is apt to work well. Faith is as much the key to happiness here as to happiness hereafter." Another has said that, "A strong life is one which commands itself and does not give up the rudder to every wind of circumstance. One of the greatest tests of courage is to carry on one's life quietly and faithfully under every cloud of uncertainty. Living by faith has always involved a struggle even for the most heroic souls." In these days of despondency, I would that you could escape the despair of life that pervades the air like a deadly vapor. Be of good courage and on cheerful terms with the world. Avoid the pessimism that stalks like a skeleton through the business and social life of our times; that sees and predicts only evil and misfortune in the future; a spirit that lives without hope and acts without conscience. Look with hopefulness on the future, for optimism is a duty. Face misfortune bravely, and do not complain nor despair. "*Kings may fall, but only fools repine.*" The world is really growing better in spite of pessimists and selfishness and cruelty. Every revolution brings us nearer the ideal condition, and the towers of selfishness that have long withstood the assaults of altruism are tottering to their fall. If you would be of that glorious future toward which the race is surely tending, you must begin to develop those qualities that will make you a part of it, and not merely an onlooker while others feast. Matthew Arnold once told us that "The world is the Philistine's, and he will possess it," but he also promulgated the great "Doctrine of the Remnant," the "remnant that should return and redeem Israel." The remnant *is* returning, the world *shall* be redeemed, and the question for you to decide is, will you be of those who will be the bearers of the gospel of sweetness and light? Will you have part in it?

This I would impress upon you, that this culture, this higher life, is essential to success. For, as Ruskin has well said, "Your hearts are, if you leave them unstirred, as tombs in which gods lie buried." True culture brings all things worth having into our humdrum lives; it adds to the resources of life; it enlarges our lives and broadens our sympathies. As William Winter has said, "These things are forever vital; their forces are within our souls, ready and eager to find their way into our strength, action and circumstances." This it is that awakens the divine sense of duty. This it is by which, as Ian McLaren says, "One is inwardly reinforced in the secret places of the soul, and is inwardly convinced that what concerneth every one is that he do his duty according to the light that is given him." Loyalty to duty is the great conscience test of all men, and conscience is the creature of culture; therefore if you would do your duty in the world be a man; if you would live nearer to the angels of light than to the beasts that perish, I adjure you by all that you hope for in this life and the life that is to come, to cultivate these things. Pin not your faith to the material things of life, for they will fade and pass away and leave no trace; but hearken to the things of the higher life of the soul, and they shall be a strength and a joy to you forever and forever.

And now members of the class of 1899, I bring you greetings and Godspeed from the faculty of the N. W. U. Dental School, and best wishes for your happiness and prosperity. We wish you every success in life, but more than that we want you so to live that you may *deserve* success. Remember that you are the keeper not only of your own honor, but also of that of your Alma Mater who now sends you forth with her blessing. Remember that in all the temptations and struggles of life two guardian spirits are hovering over you to guide you by their prayers and to shield you from all evil. They will rejoice when you succeed—and will weep when you fail. These are the spirits of your mother, and of your college. Do not ever grieve them.

And now, may God's richest blessings be upon you all—Hail a farewell!

Dr. Geo. Watt.

By E. G. Betty, D. D. S., Cincinnati, Ohio.

When our secretary requested me some time ago to prepare and read an address upon the life and work of Dr. Watt, I consented.

Little did it occur to me at the time that the task would be so difficult. There seemed to be so much to say, so great a wealth of material out of which to construct an address for such an occasion as this, that I cheerfully promised a memorial offering and lay it before you.

Now that we have listened to Prof. Taft's able effort, it is with great diffidence I give voice to that which I have prepared, for no one is more cognizant of its shortcomings than myself, and I shall feel amply repaid if it will recall to your attention some of the traits and qualities of the good man gone before us.

It was my good fortune immediately upon graduating to consummate an arrangement with Dr. Watt, whereby I was to take charge of an operating chair in his office. I accordingly removed myself and my effects to the little town of Xenia, and was domiciled as a member in the doctor's household. I was a mere stripling and had scarcely ever been away from the fostering care of the paternal roof, and when I realized that home ties had been severed, the rubicon crossed, and the great plain of my future stretched out before me, I was appalled, and had I been a girl I undoubtedly would have indulged in a good cry. As it was my heart failed me, and I told the doctor he would better get somebody else to do his operating for him, I did not feel equal to the occasion.

He was seated in his large tiltback chair, just such a one as you have often seen in the office of some down town merchant, reading that good old-fashioned paper, the Cincinnati *Gazette*. He looked up at the sound of my timorous voice, and for the first time I obtained a good view of as kind and merry a pair of blue eyes as ever twinkled over the golden bow of a pair of spectacles. He looked long and steadily at the trembling boy before him, summing up the situation, and I can hear the rustle of the paper to this day as he laid down the *Gazette* and said "Let us take a walk."

That walk was just what I needed and he knew it. The morn

*Address at the unveiling of a Bust of Dr. Watt.

ng was cold and crisp ; the sun shown down from an intensely blue ky upon a light snow which had fallen during the previous night ; he air, rich with ozone, filled my lungs with a draught exhilarat- ng as wine, and ere half an hour had passed a wonderful meta- norphosis had taken place ; the homesick lad was now an ambi- ious youth, ready to do or dare.

From that day forth a new life had begun for me, and under avorable conditions, too ; for though I did not then appreciate it, I ave since learned to realize that I was associated with a man of road attainments and correct habits of mind.

He was brimful of humor at nearly all times, and no matter ow dull the subject, how abstruse the point, he never failed to llustrate with a witty remark or humorous story which invariably elieved the tedium of hard work and prevented the mind from logging.

In all my acquaintance I can recall no one more tactful than Dr. Watt. He observed keenly, analyzed carefully, summed up with the skill of a practiced logician, and knew just the moment when "a word fitly spoken is like apples of gold." Of Scotch ncestry, he was by nature argumentative, but not quarrelsome ; alkative without garrulity, and furthermore possessed the virtue f always having something to say. He had a rare sense of justice, while his sympathies were always with the underdog. Nothing leased him better than to spring a surprise upon you in the way f a new fact, or to introduce an old friend with a new face and see what you thought about it.

Dr. Watt was not only a great reader but he was a keen and nsistent thinker. Nothing escaped his observation, for his eyes ere quick to see and his well trained mind classified and arranged s vast store of knowledge while his discriminating judgment nabled him to use this ponderous power to the best advantage. Woe to the adversary in debate, should he not be well fortified with an array of well established fact.

He was the only man in the dental profession who could suc- ssfully handle and confute the late Dr. W. H. Atkinson, whose agaries at one time occupied a large share of attention in the merican Dental Association and other bodies and much valuable ace in the journals and transactions of that day. Against these r. Watt now and then discharged a volley of satire and ridicule,

so sharp, so scathing, so withering that none but Atkinson could have held out so long.

Dr. Atkinson's angels and volapuk, together with the animadversions of Benjamin Beryl Blynx, constitute a theme worthy of Isaac D'Israeli and deserves perpetuation as a "Curiosity of Literature" rather than a "Quarrel of Authors." Atkinson's volapuk contained within itself its own tubercle, though I am firmly convinced Dr. Watt's broadsides of grape and shrapnel but hastened what might otherwise have been a slow and painful death. These attacks were in nowise acrimonious, but it was a sight worth miles of travel to look at Watt's face while Atkinson was going through his characteristic performance of injecting the grace of God with a syringe.

I hope some master hand will gather together the chronicle of this battle royal and give it to us in its entirety; it was a contest between giants, the like of which does not occur more than once in a generation.

Few writers in the ranks of the dental profession have wielded such a graceful pen; certainly none have excelled him in command of language. He was a close student of English literature and was familiar with all its classics; his remarkably retentive memory enabling him to lay up vast stores of riches upon which he could draw at will. His diction reminded me much of Addison.

Now and then of an evening by the cozy fireside he would give way to chatty reminiscence, his experience as a student, his trials as a medical practitioner in country districts, and through it all I could recognize a resemblance to dear old Sir Roger.

He once told me that his literary models were Goldsmith and Kirke White. Just think of it, Goldsmith and Kirke White! What a contrast; what a gulf between them. Goldsmith, a bohemian in every sense of the word, a poet who wrote for the world and for all time; who sounded the remotest depths of the human heart and set its strings to vibrating with eternal harmony; Kirke White, a religious ascetic long ago forgotten, and whose name the most of you are now hearing for the first time.

I cannot account for the coupling together of these two men unless it be that Watt loved Goldsmith as the child of nature while he revered Kirke White for his Calvinism.

Dr. Watt was gifted with that which few scientific men, either possess, or if they have it, few cultivate, a lively imagination

'Twas this which gave such rich coloring to his speech, an indescribable attraction in all he wrote. Many a gem has fallen from his lips, many a jewel adorned the editorial page.

I have heard the complaint oft repeated "this is not practical," or "that is not scientific," "we want facts."

Poor sodden fools, the pearl was there, but the swine saw it not.

Can any one recall throughout the whole length and breadth of dental literature anything to compare with "Lord Oxygen" and his worthy consort "Lady Hydrogen"?

These are masterpieces of English composition; they bristle with scientific facts for the Gradgrinds; the imagery is beautiful and delicate as the crystal flakes which fall from the winter sky. I know of nothing with which to compare them, unless it be Faraday's "Chemistry of a Candle" or Huxley's essay on "A Piece of Chalk."

Of the scientific nature of Geo. Watt's mind, his chemical theory of dental caries is ample evidence. The careful construction and elaboration of that theory was the work of many years; for many years was it taught in the colleges, and for near a generation was part and parcel of many a lecturer's stock in trade.

And though in recent years the formulation of the germ theory, through the labors of Milles and Underwood and Miller, in consonance with the germ theory of diseases in general, has been of great benefit to dental science, it is possible the story has not all been told. Further and deeper investigation may yet explain the clinical features for which the chemical theory provided.

There may or may not be found a bacillus to account for the presence of ammonia and its compounds in the mouth. I have grave doubts that the microscope will do away with the science of organic chemistry. Until that is done, Dr. Watt's chemical theory of dental caries, with all it implies, remains to be disproved. He may have builded wiser than we know.

In his private life Dr. Watt was eminently domestic; all his tastes gathered about the hearthstone. It was there the privileged friend became acquainted with the real inner character of the man. To have known him at such times is a memory to be cherished. The recollection of his good, kind face will abide with me always.

I need scarcely say to those who knew him that he was a man

of profound religious conviction, a condition of mind not at all inconsistent with an intellect trained in scientific induction.

He firmly believed in the immortality of the soul. The heaven he longed for and looked forward to was one in which he should be permitted to peer into the infinite. As Sir John Lubbock words it, "The solution of problems which have puzzled us here; the acquisition of new ideas; the unrolling the history of the past; the world of animals and plants; the secrets of space; the wonders of the stars and of the regions beyond the stars. To become acquainted with all the beautiful and interesting spots of our own world would indeed be something to look forward to—and our own world is but one of many millions. I sometimes wonder as I look away to the stars at night whether it will ever be my privilege as a disembodied spirit to visit and explore them."

"I feel that to me," said Greg, "God has promised not the heaven of the ascetic temper, or the dogmatic theologian, or the subtle mystic, or of the stern martyr ready alike to inflict or bear; but a heaven of purified and permanent affections; of a book of knowledge with eternal leaves, and unbounded capacities to read it, of those we love ever around us, never misconceiving us, or being harassed by us, of glorious work to do, and adequate facilities to do it, a world of solved problems as well as of realized ideals."

It is meet that we do honor to the memory of such a man as Dr. Watt, and when we look upon this tablet I trust it will remind us of his lofty ideals and stimulate us to emulate a noble example.

The Relation Between Medicine and Dentistry.*

By Daniel Norton, M. D., St. Joseph, Mo.

Upon my grandfather's farm in Kentucky there was a mound which was known among the boys as an Indian grave. In this mound we boys delighted to dig, and here we unearthed relics of the noble red man—arrow heads, pipes and other articles commonly used in savage life; but, not always stopping with these, we turned out a bone of the leg, of the arm, or a skull, decayed in every part except the teeth, and these deftly extracting with our

*Read before the St. Joseph Odontological Society, St. Joseph, Mo., February 11, 1899.

fingers or picking them up as they fell from their sockets, we carefully preserved, vying with each other in securing the largest number. While this was my first introduction to the science of odontology, I have since learned that the teeth are made for more purposes than that of affording restless boys something with which to play, and to-night as I attempt to speak to you of the relations of our professions, my memory reverts to those happy boyhood days in "my old Kentucky home," where "the birds make music all the day."

There is a universal belief among the laity that teething is accompanied with disturbances of the function of digestion as well as with erratic nervous manifestations. It is hard to prove or to disprove this prevalent belief, but it seems unreasonable to attribute pathological effects to physiological causes. Yet every practitioner knows how many sins are laid at the door of teething and how perfectly satisfied the mother will be with this given as a cause of any disturbances of the digestive processes. I firmly believe that the eruption of a tooth is accompanied by discomfiture or even pain to the infant. I can on no other grounds explain the drooling, the desire to bite a hard substance, the unmistakable satisfaction produced by rubbing the gums. But how, for instance, can this process set up in the small intestines, distant many feet, a fermentative diarrhœa which is dependent upon a specific germ for its existence? Surely there is no connection between the germ and the tooth. It is far easier to believe that a tight, tense membrane stretching across a tooth just ready to peep through, may produce a spasm by the reflex irritation which it sets up, the efferent impulse being sufficiently powerful to temporarily destroy the equilibrium of the nerve cells of brain and cord. In other words, if teething does give rise to abnormal constitutional conditions, it does so through the nervous system, either by reducing vitality or by reflex action. As you well know, reflex action may account for many things.

At a recent meeting of the St. Joseph Medical Society, Dr. M. F. Weyman reported cases of earache, which, upon examination, showed no abnormal condition of the ear at all. The pain was so intense that relief was imperative. A careful search of the teeth was made, and in each instance a diseased tooth was found, removed or treated, and relief of the earache was prompt and permanent. These were cases of earache not dependent upon any

inflammation of the structures of the ear, and they illustrate admirably the service that dentists and doctors working in harmony may render patients thus distressingly afflicted. For what is harder to bear than an earache? Nothing unless it is a toothache.

It has been a matter of observation with me for many years that pregnant and nursing women suffer more from decaying teeth than at other times, and it is my custom to instruct such patients to have the teeth inspected several times during pregnancy and lactation by a competent dentist. I am not one of those who believe that the filling of a tooth or even its extraction will, per se, be sufficient cause to produce a miscarriage. If this were only true how easy it would be for us doctors to dispose of all these women who do not want any more babies. I know a number of women who would gladly sacrifice a tooth if by so doing they could be relieved of all further annoyance from uterine contents. I do not know of any reason why the administration of nitrous oxide gas should be dreaded more or even as much as the anæsthetics ether or chloroform, yet pregnancy is not considered a bar to surgical operations. If the teeth need attention, they should have it, provided shock is avoided. But why is it that pregnant and nursing women are subject to greater destruction of the teeth than women not so conditioned? This question I am not prepared to answer fully. Does the child in utero or the child at the breast find a lack of tooth and bone forming elements in its nourishment, and does nature draw upon the mother to supply the deficiency? I hardly think so. It is true that the chemical constituents of bone and of teeth are the same in some instances, but the total amount of bony material in all the teeth is very small. Then there are no lymphatics in the teeth, and it is through the lympathics that nature draws upon distant sources of supply. Furthermore, it is my understanding that decay of teeth is produced by bacteriæ, just as decay in everything else. Some one has said that "bacteriæ are the ultimate scavengers of the earth." The soft structures of the interior are usually invaded through some break in the enamel, either mechanical or bacterial in origin. This I believe to be sound doctrine. There must be an infection atrium and a specific germ before decay, but after all, may it not be that even then infection and invasion would not occur if the vitality of the mother were not below par? The decaying tooth then becomes simply the locus minoris resistentiæ.

Delayed dentition is a frequent occurrence, and is the result of improper assimilation, and not, if you please, of improper nutrition. The requisite material is furnished the body, but for some reason the function of digestion is unable to seize upon it, and appropriate it for the intended uses. As a result, we find in these cases profuse head sweating when asleep, butting of the head against the bed, incomplete closure of the fontanelles, softening of the bones, in a word, rachitis. This is a condition in which phosphorus acts apparently by catalytic action, for we may supply the bone elements ad libitum without appreciable benefit, but phosphorus, like a magnet, attracts the constituents of the osseous system, and sets at work again the selective functions of the digestive system. Such patients will not be likely to fall in the hands of the dentist for treatment, but he will doubtless be asked about them, and he should be able to recognize the condition, and advise that the patient be referred to a physician before permanent deformity has occurred.

The teeth may indicate a dyscrasia or a diathesis. The notched teeth of Hutchinson are pathognomonic of inherited syphilis, but you will pardon me if I recall to your memory that the notching occurs in the permanent teeth, not the temporary, that the upper central incisors are the teeth which are most plainly deformed, that the furrow is vertical, and that we may have a case of congenital syphilis without the notch deformity. The large tooth of the gouty patient is a part of the large bony development of this diathesis. The so-called strumous or scrofulous patient has decayed teeth with a bluish line around the point of decay. In hereditary tendency to tuberculosis we often find pearly white teeth, and patients with this peculiarity, when once they develop tuberculosis, resist its onslaughts very poorly, and have profuse hæmorrhages. It is the sound, yellowish white, unchecked tooth which indicates good health.

Physicians are much to blame for the advice which they often give regarding the temporary teeth. How often do we hear them say "That tooth is decayed, but then it is a milk tooth and not worth saving. Have it pulled out." This is bad advice. Milk teeth should be carefully preserved by filling whenever needed. If the tooth is extracted, the jaw contracts, and when the permanent tooth makes its appearance, it finds insufficient room for it, and as a result, crowds over its neighbor or is itself crowded over,

and as a result we have overlapping. If the milk teeth are preserved, however, until the permanent teeth are ready to assume their positions, we have neither contraction nor deformity of the jaw, and there results a good "bite" for masticatory purposes. The six year molar is often sacrificed by ignorant parents, who believe it to be a temporary tooth, and when it shows signs of decay, pay no attention to it on that account.

It has been my fortune to have had several patients in the last two years suffering from intestinal indigestion, which was, I believe, directly traceable to bad teeth. In some of these cases the teeth were missing, and in others they were badly decayed and neglected. It is highly important that the digestive organs should receive the food in a well triturated condition. Without good teeth this is impossible. When the mass is impregnated with rotten and decaying matter from foul teeth, the condition is made worse still. So that with all my cases of dyspepsia, I turn my attention to the teeth as one of my first remedial measures. If there are any missing, I have them replaced with artificial ones; if there are cavities, I have them filled; and then with toothbrush and wash I endeavor to keep the mouth in an aseptic and sweet condition. I am sure that appendicitis in very many instances arises from intestinal indigestion, but there are other disastrous consequences besides this to which it may give rise. Any one with poor digestion is below par, and an easy prey for disease to fasten itself upon, because the resisting power of the body is lowered.

There are some acquired deformities in children which I have noticed at times. Among them I may mention the projecting of the upper front teeth over the lower to an unusual degree. This results from the pernicious and unsightly habit of sucking the thumb. The bite of these children is often very bad, and the irregularity of the teeth which it produces is anything else than pleasant from a cosmetic point of view. The habit is usually taught the child when a mere infant in order to keep it quiet, and is exceedingly difficult to break up.

Dental asepsis has always seemed worthy of the most careful consideration. The great scourge, tuberculosis, is unquestionably capable of transmission by the dentist's instruments, and I have often shuddered when I have heard a syphilitic patient of mine in the contagious stage speak of having his teeth looked after. But I do not care to dwell upon this point other than to say that I am

sure dental instruments should be sterilized before use in very much the same manner as physicians sterilize their instruments.

In the realm of head surgery, our professions touch closely. Antrum disease comes as much within the range of your calling as mine. The removal of the inferior dental nerve for neuralgia is practically impossible without the help of the dentist. Cleft palate requires the help of each profession for perfect restoration. In the removal of the Gasserian ganglion, what would we do without the dentist? In all bone work, I am quite sure that we do not enlist his services as much as we should, for with the skill which he has acquired with the dental engine, he could be of the greatest service imaginable.

And now, gentlemen, in conclusion, permit me to say that in inviting me to read a paper before your society you have paid me a compliment which I cannot allow to pass unacknowledged. I count myself highly honored in being invited to appear before you to-night. The compliment is a personal one. As I look into your faces, I see some whom I have known ever since I have lived in St. Joseph. It has been my pleasure to be called in the families of a number whom I am now addressing, and no man can pay me a higher mark of esteem than that. I have been with you in seasons of joy, when children were born in the house, and I have been with you in seasons of sorrow, when the angel of death has torn from your homes those whom you have loved. With others of you my relations have not been so close, but with all of you friendship and good will and many acts of courtesy have marked our intercourse, so that to-night I know I am among friends. But while I speak of these personal relations, I do not lose sight of the fact that in inviting me to address you, you have also indicated your good feeling toward the profession which I represent, and this is equally as pleasant to know. The aims and objects of our professions are the same. "We be one people," and it is fitting that there should be between us the most perfect good will, and the same desire for professional advancement.

Many years ago the lamented Dr. Palmer, of Louisville, in dismissing a graduating class, used the following beautiful words: Gentlemen, as you pass through yonder doorway, sweet music will waft to you the faculty's benediction. Catch the time and keep it, but remember that the beautiful Hygeia whom you have

this day wedded is as coy as she is beautiful and brooks none save undivided love."

In return for this exacting allegiance, our work gives ample rewards, and not the least of these is the legacy of knowledge which we may leave to those who follow us, if we but be true to our noble callings. Let us see to it that this legacy is better and greater than that which our fathers left us, for in this way is progress made and in this way may we

> "Join the choir invisible
> Of those immortal dead who live again
> In minds made better by their presence; live
> In pulses stirred to generosity;
> In deeds of daring, rectitude and scorn
> For miserable aims that end with self;
> In thoughts sublime that pierce the night-like stars,
> And with their mild persistence urge man's search
> To vaster issues.
> So to live is heaven
> To make undying music in the world."

Report of a Case of Orthodontia Combined with Bridge Work.

By Geo. W. Haskins, M. D., D. D. S., Chicago, Ill.

In May, 1897, Miss X. called upon me to have her teeth attended to. Upon examination I found in addition to the usual caries one would expect under the circumstances, there was present on the lower jaw a porcelain central attached to the left lateral by a gold band; the lateral was apparently in good condition; the other central was absent and the space where it had been was closed; the right cuspid and first bicuspid closed outside of the arch of the upper teeth; on the upper jaw the centrals had each been crowned with a Richmond crown, the gum surrounding them was inflamed, and pus was flowing from around the neck of the left central; there was nothing to indicate faulty root filling though the coloring of the porcelain teeth was at fault and their size disproportionately large that they might more nearly fill the space between the cuspids, for there were no laterals present, one never having erupted, and the other—a small, round, pointed tooth—had been extracted by the advice of the dentist. Fig. 1 shows most of these points quite clearly.

The previous history of the mouth as gathered from Miss X. is that the centrals had been filled six times, and the last filling

had caused the death of the pulp in the right central, and subsequently it became very much discolored; this, coupled with the fact that they were both abnormally large and unsightly caused her to accept the advice of her dentist, and they were cut off and



FIG. 1.

crowned. And then to quote from a letter, "From time to time both teeth ulcerated; about a year later while in another city, they ulcerated again and I consulted Dr. ———; he drew off the pus,

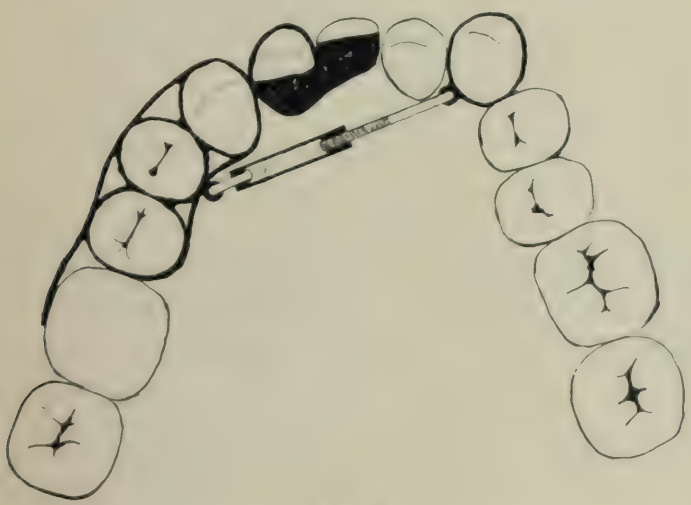


FIG. 2.

treated the teeth for about a month and recrowned them, after which they gave me no further trouble."

The previous history of the upper lateral I have spoken of and of the absent lower lateral I got no history. The filling of the carious cavities presented no unusual features, and I will pass to the work on the lower jaw, digressing long enough to explain how the illustrations were made. I photographed the casts and then used the negatives as lantern slides, projecting the image upon paper and getting the outlines in this way. I am aware the forms are not ideal tooth forms, but they are as faithful reproduction of the casts as camera and lantern could make.

It was decided at once to remove the band and artificial tooth from the lower left lateral and to draw the right cuspid and lateral

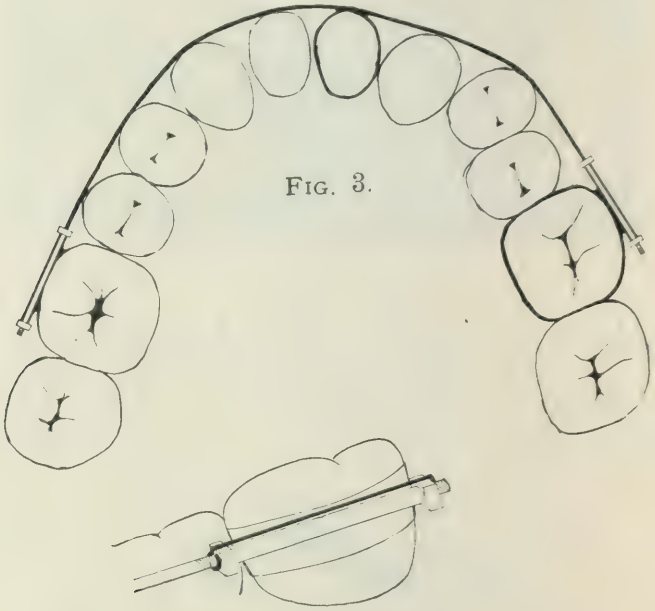


FIG. 3.

FIG. 4.

mesially to fill the space left by the absent central, and so th cuspid would close within the arch of the upper teeth. Upo removing the lateral band I found upon the lingual side of th tooth beneath the band a cavity of decay which had the appear ance of having been made originally with a bur. It extende through the enamel and gave unmistakable evidence of decay induced, I think, by the presence of the band. The conduct of th case was as follows:

The left cuspid and both bicuspids were banded with wid bands and united where they joined each other; narrow strips o German silver, gauge twenty, were then soldered upon the labi

nd lingual sides of the bands, using considerable solder, aiming to nake the attachment so solid that power applied to it at any point vould move it as a whole. Referring to the drawing, Fig. 2, it will ›e seen that the labial portion of the strip extends to the molar. It lid not seem advisable to include it in the anchorage more than his, as it was not in a very stable condition; as I had been com-›elled to remove a crown from it, treat an incipient abscess and fill he roots, this had left it rather irritable.

The right cuspid was banded, but it was not necessary to band he lateral as it could not well escape moving in the right direction is it was forced forward by the cuspid; the usual traction screw was then used and the movement was continuous from the start intil the gap was closed and the cuspid closed within the upper arch. To retain them in this position I now made a gold crown or the left first molar from which it will be remembered one had ›een removed. The right first molar and lateral were banded and ipon the buccal surface of both molar band and crown a tube was oldered (with its long axis extending in an anterio-posterior posi-ion) which would provide support for a wire which was fitted to he labial surfaces of the teeth and extended from molar to molar, ee Fig. 3; this was threaded on the ends for a distance greater than he length of the tubes; two nuts were then made for each end; upon he labial surface of the lateral band was soldered a short section f tubing in such a manner that it could be opened at the joint, nd then closed again after the retaining wire has been placed in t. With the crown and band cemented in place, one nut was crewed on each end of the retaining wire as far as it would go, he ends were then slipped through the tubings on the molars, the istal nuts turned on and tightened until the teeth were all held ghtly in place; the mesial nuts were then turned back as far as ıey would go, thus locking all tight together, after which the open ıbing on the lateral was closed, providing support for the middle f the wire. As a retaining appliance this did not prove an entire uccess, as in time I found the nuts would loosen. To prevent this made for each side an attachment of wire made from eighteen gold and which had been drawn to gauge twenty-three, the last ix holes without annealing. A ring was bent in the end of this ire just large enough to permit the passage of the retaining wire; ıe ring was then grasped flat in the flat pliers and the balance of ıe wire bent at right angles to it and at such a distance that when

the ring was passed over the retaining wire the portion bent at right angles rested upon, or engaged the flat side of the nut, so that the nut could not move without carrying the wire with it. The other end of the wire was then shaped like the first, the two rings at such a distance apart that they fitted snugly against the mesial and distal surfaces of the first and second nuts when all were in position. I have indicated in Fig. 4 how it was arranged better perhaps than I can tell it; to apply it one ring was opened enough to permit the retaining wire to slip through, the other was passed over the distal end of the retaining wire, the opened ring slipped over the retaining wire in front of the mesial nut; the ring was then closed with the pliers, which drew the wire flat against the nut and effectually prevented any further movement.

On account of the pathological conditions which had existed previous to my seeing the patient, and from those which prevailed when I first saw the case, I hesitated as to the wisdom of attempting to do what I very much wanted to do, namely, to make sufficient space between the upper cuspids to insert a bridge, consisting of the two centrals and the missing laterals, and finally decided only to replace the central crowns with two which would be more sightly and at the same time discover the cause of the pus formation around the left central, and remedy, if possible. Upon removing the crowns I found the roots filled with oxyphosphate of zinc cement, the right well and the left imperfectly. They appeared to me to have been filled when the crowns were placed, depending upon the pin of the crown forcing the cement up into the root canal. No shaping of the roots had been attempted other than to grind them level with the gum. A rim of enamel still showed on the end of the truncated teeth, and the bands which had been fitted to them necessarily irritated the gums and were the cause of the pus which I have mentioned.

After treatment I filled the roots with gutta-percha points, reshaped them, and then made two Richmond crowns and set with gutta-percha.

From the better knowledge of the condition of the roots gained by seeing them with the crowns off it seemed advisable to proceed with the plan of placing a bridge of four teeth on the central roots. The first step in the operation was the drawing back of the cuspids until the space between them and the bicuspids should be closed. Fig. 5 illustrates two of the appliances used.

A description of the appliance used for one side will answer for both. On the right side of the mouth a first bicuspid and a first molar were banded; these were then united by German silver strips, gauge twenty; on the lingual side the strip was allowed to extend well forward; on the buccal side of the molar was soldered a short section of tubing, which was threaded; for this was made a long headed bolt; a strip of German silver was then rolled hard to gauge thirty-five, and from this was cut a long strip, one-eighth inch wide throughout most of its length, but on one end it was left one-fourth inch wide; this greater width was to enable me to

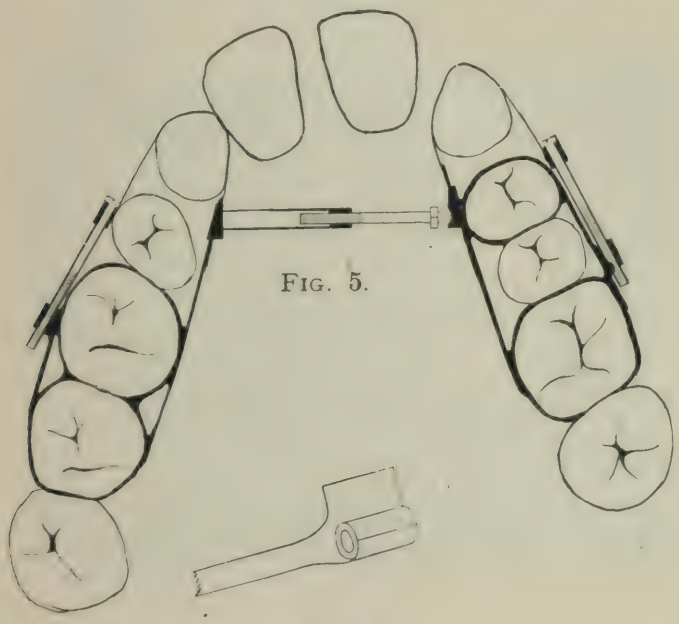


FIG. 5.

FIG. 6.

attach it to a short section of tubing in which the bolt would turn freely, yet small enough to prevent the head of the bolt slipping through; the wider portion of the strip was wrapped around the tubing and soldered with soft solder, as shown in Fig. 6. Soft solder was used because I did not want to soften the metal by a greater heat; the bolt was passed through the tubing and turned into the nut on the molar band; the flexible strip was then carried around the cuspid and united with the lingual portion of the attachment with soft solder; this supported the flexible band and prevented its slipping up on the neck of the tooth. The head of the screw was slotted and was turned with a screwdriver which drew on the flexible band and soon drew the cuspids back to the desired position.

In order to retain them there, I left the appliance in place, but as I wanted still more space between the cuspids, an expansion screw was made and attached to the lingual strips of the appliance by means of clips, which were bent around the strips without removing the bands from the mouth; so little expansion was needed that no precaution was necessary to prevent any undue tipping out of the cuspids.

There remained now but to bring the centrals together, and when together to have them divide the space between the cuspids equally ; this gave more difficulty than any other step in the operation.

While using the expansion screw to increase the distance

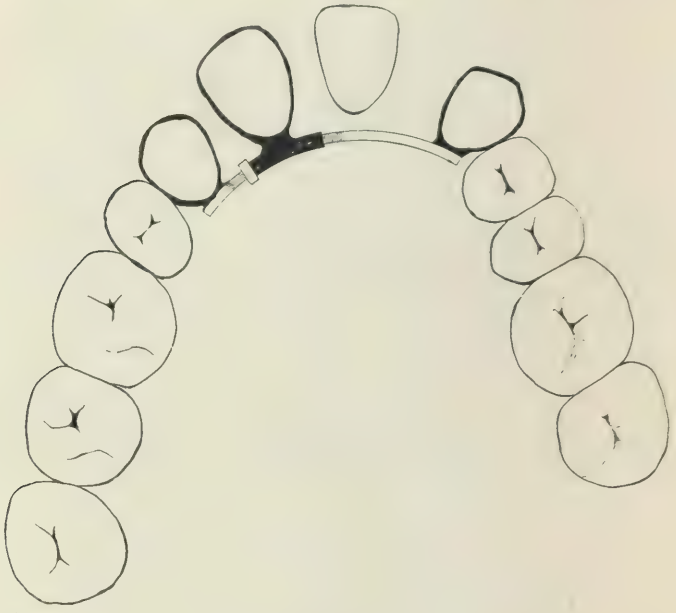


FIG. 7.

between the cuspids, I thought to accomplish two steps at once by wedging between the right cuspid and central with pine wedges not expecting to accomplish all the movement of the central but merely to help. I soon abandoned the plan, as I found that the apex of the tooth was tipping badly to the middle line of the mouth and although they were but roots to be crowned, I wanted them to be parallel, to facilitate the making and placing of the bridge.

After the cuspids were sufficiently spread and they had recovered somewhat from the soreness incidental to their movement, th

first appliances made were removed, and the cuspids and the right central were banded, as illustrated in Fig. 7. The band for the central was very wide, covering almost the entire exposed portion of the tooth; with round German silver wire, gauge eighteen, I now made an arc to connect the two cuspids and made to slide upon this a piece of tubing one-fourth inch long, made from German silver plate, gauge twenty-six. The joint was soldered, and it was just large enough to slide freely on the wire. Some precautions are to be observed in making and bending this tubing in order to make it successful. The soldering of the joint should be done with the smallest possible amount of solder with

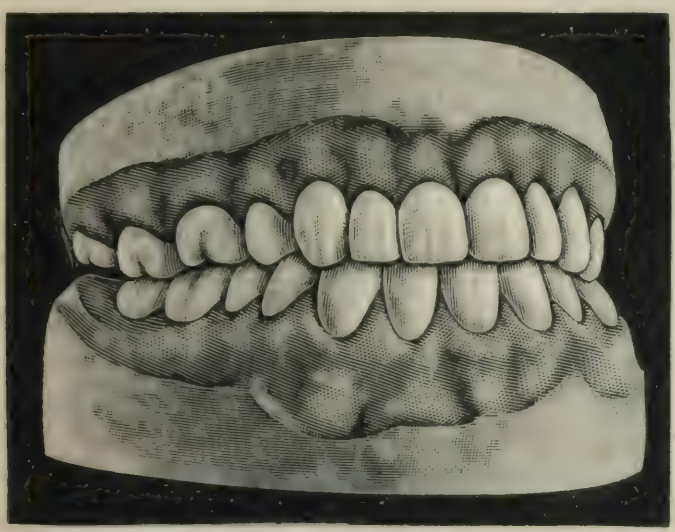


FIG. 8.

no surplus solder within the tube, and any surplus upon the outer surface removed, otherwise when the tube is drawn through the draw plate the outside becomes uniform and the irregularities are transferred to the inside of the tube. After soldering, the tube should be drawn to the requisite size, annealed and slipped upon a German silver wire that fits it snugly. This wire should be well coated with beeswax and inserted when hot and the wax fluid, then wire and tube are bent together to the shape wanted, saw through both tube and wire for one end of the tube and only through the tube for the other end. This will leave the wire uncut, and it can be grasped by the pliers while wire and tube are heated and the tube pushed from the wire.

That portion of the wire arc which was opposite the right cen-

tral I cut a thread upon and made a nut to fit; then slipping the tube on the wire and turning on the nut, I coated all with rouge and soldered the ends of the wire to the cuspid bands and the tube to the central band, this latter quite solidly so the band could not twist on the tube but must necessarily follow the movement of the tube as it slid along the bent wire as the nut was turned; the movement of the central was continuous and it never lost its upright position; it soon met the left central and after moving it slightly they were left in the center of the space between the cuspids ready to complete the bridge.

From the movement of the central from the cuspid and to the other central the gum receded from its distal border and piled up upon the mesial, exposing the gold band on the distal side of the crown. This made it necessary to cut down the root and make a new crown, and that they might be alike I made one for each root and attached the laterals; the bridge was finally set with gutta-percha and furnished all the retention needed to prevent the teeth returning to their former position.

The work was completed in about twelve months from the time it was commenced. Several times during the course of the work time was lost, on account of the illness of Miss X., and through waiting for the teeth to recover from the soreness resulting from their movement. It also seemed best to move the centrals slowly and cautiously, considering their previous history. At no time did they give evidence of any unfavorable conditions.

Scientific Application of Force in the Regulating of Teeth and Artistic Perfection of Facial Contour. Illustrated by Casts and Pictures of Typical Cases.*

By Dr. C. S. Case, Chicago.

Mr. President and Gentlemen: I am not going to attempt on this occasion the delivery of a specially prepared lecture on orthodontia, but rather propose to talk to you a little while in a very informal way about some of the general, and to my mind, very practical branches of this department of dentistry, in which I am so much interested.

*Read before the Minnesota State Dental Association.

I am going to speak to you first about some of the errors that are commonly made in the treatment for the regulation of teeth. Second, I shall endeavor to take up briefly the subject of the relations which the teeth and jaws bear to the physiognomy, with the view of showing you that it is through a knowledge of this branch of the subject that we hold the key to the outlining of correct treatment. Third, if I have the time, I will exhibit a machine and demonstrate some of the principles of applied forces applicable to the regulation of the teeth.

For the first twenty-five years of my practice I was engaged in general practice of dentistry, though during the last five or ten years I dabbled more or less with the regulation of teeth, and I want to say to you I made a great many mistakes; I made awful mistakes. Perhaps through a lack of education, experience and judgment, but mistakes which I can see now required only a little good, common horse sense. No special scientific knowledge or learning is required, no flights into the realms of science, yet there are things in orthodontia that are hard for any man to determine; and I find dentists to-day (it was my own experience) who make mistakes about things that only require a little good, common sense to avoid. I am going to speak of a few of these this morning.

I would like to speak briefly, first, of the disposition to regulate children's teeth—the disposition of dentists to regulate children's teeth that ought not to be touched; second, the disposition to extract teeth that ought to be saved, principally the first permanent molars; and third, the disposition to save teeth that ought to be extracted.

I cannot go extensively into all these departments; I cannot tell you everything as I would to students, and it is not necessary; but I want to call your attention to things that have come to me in a very prominent way. They are errors that are commonly made by dentists, and I will say that prominent dentists are among them.

I will speak first of a case that was brought to me in Chicago. A child eight years old, wearing a plate and apparatus for the regulation of very irregular teeth. This was the daughter of one of the wealthiest men in Chicago. I said to him, "Mr.——, if the child were mine I would take off those appliances, I would take out that plate, and I would let that little child go free." "Why," he said, "the teeth are very irregular, and something

must be done to straighten them." I said, "Let me explain to you. Here on each side are the deciduous cuspids waiting for the permanent cuspids to grow and become erupted. How could nature do anything more beautiful than to put these permanent incisors in an overlapping position—in that narrow space occupied once by the baby teeth without crowding? Is not nature doing everything she possibly can in this case? Why should somebody interfere and try to assert his ability to push those teeth out with barbarous appliances? He only forces the cuspids out of their proper position. I would give the jaw a chance to grow naturally and make room." The father was simply delighted. Had that case been one in which the teeth had been in such a position that would not permit nature to restore them, then there would have been an excuse to regulate them. There are a great many conditions in which teeth ought not to be touched, and dentists often refer them to me for regulation. Under twelve years of age you can regulate teeth with perfect ease, so far as that is concerned. I have a number of cases that are eight, nine and ten years of age.

In regard to the extracting of permanent teeth, let me say do not extract the first permanent molars, even though they be badly decayed, until you have carefully considered the effect upon occlusion and development of the jaw, and the influence they may exert on the physiognomy.

Here is another case. The cuspid was thrown far out of position because of the premature extraction of the deciduous cuspid and the space closed, so the dentist removed the first bicuspid to push the cuspid into position. But he made a common mistake. Look at the plaster model of the face of this patient: A girl between thirteen and fourteen years of age, with the matured appearance of a woman because the central portion of her face is depressed. If we could bring forward all those teeth, the upper and the lower, and enlarge the arch, we could improve that face. The very fact that the teeth are irregular, crowded and overlapping, is the best thing about the case because it permits the arch to be enlarged in order to perfect the face. It does not make any difference about room. You think when you see a case where the teeth are exceedingly irregular, you cannot get them into the arch unless you extract some of them, but it is not so. In any arrangement of the teeth they can be put into the arch in an upright position, if force is properly applied, without crowding or cramming. If the

alveolar process does not immediately accommodate itself to them it will come in time; and you will find it will very often not move with the teeth when you force them along. They will frequently move by absorption, leaving deep depressions between the roots. I can show you models at which you will be surprised. I used to think I was treading on ground that was dangerous for these patients. Now I do not hesitate to crowd the teeth right out and hold them there, knowing that I shall have the filling in of the process; and the production of the proper contour of the face. So it would have been with that case. What am I going to do with it? When I have regulated it I am going to insert an artificial tooth in place of the one extracted to hold the arch in position.

I will show you the models of another case where the dentist



FIG 1.



FIG. 2.

had been regulating the teeth for a year or more, and he had done the same thing as the other man, only more so. He had extracted the upper and lower left bicuspid, and then in order to perfect the irregularity was forcing the cuspids into place. A boy thirteen years of age, whose father is one of the giants of Chicago. Think of extracting teeth from those little jaws that were destined to grow so much. The dentist was only looking at the teeth. They concentrate their thoughts on the teeth, they cannot see anything but the teeth in every case that comes along. They do not stop to look at the face, they only think, how are we going to get these teeth into line? Why, we must extract them; and so it goes. That case will have to be regulated in the same way, by opening the spaces.

Let me call your attention to another case that came to my

office Saturday, the day I left for Omaha. Look at the depression along that upper lip. How the lower lip and chin seem to protrude. The lower teeth closing in front of the upper, causes a decided depression along the upper lip.

The case came to me from a prominent dentist in Ohio, because he thought Dr. Case knew more about regulating teeth than he did. He wanted me to make arrangements to keep the patient in Chicago until the appliance got into working order and then return the case to him and he would work it for a while and then return to me again, etc. But before sending me the case, in order to help me along with my work, seeing that the upper teeth were very

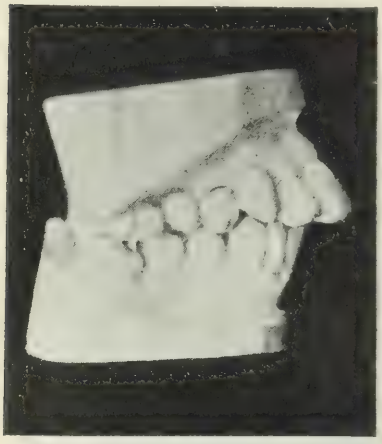


FIG. 3.



FIG. 4.

irregular indeed, and knowing that it would not be possible, as he supposed, to get those teeth into position without extracting, he thought he would perform a great kindness to me and so extracted the first bicuspids on the upper jaw. Now there it is. Do you know those cases are just like a puzzle to some dentists. I can show you how I make mistakes to-day myself, and yet I am devoting my entire thought to this line of work, and I know that other good dentists make mistakes that are very similar to my own. What can I do with that case? I should want all the teeth in this case, to hold the arch in position when they were regulated.

How do I get the face models? I tell a little girl, for instance, I want to take a plaster impression of her face. These are all from plaster impressions. I do not care how young or how diffident, I do not tell that little patient I am not going to

hurt her a particle; I do not say anything about pain, I simply tell her to take a seat and I will take an impression. I gain her confidence and she knows I will not hurt her. I would not lie to a little child for a thousand dollars. I just tell her I am going to put vaseline over her face and to close her eyes, and then I lay the plaster on her face and take it off in ten minutes; that is the way I took the impression of the face of this little girl and you can see the result for yourselves.

Now, I want to show you two cases that are somewhat similar and yet require very different treatment. You see it is quite difficult in both cases for the cuspids to come into place. (See Figs. 1 and 2.) Fig. 3 shows teeth of Fig. 1 after they were regulated by one of the prominent dentists of New York City.



FIG. 5.



FIG. 6.

He did not believe that the teeth ought to be extracted. He believed the teeth were put into the mouth for some great and good purpose by the Creator, and when we interfere with that we do a great wrong to the patient; so he regulated those teeth without extracting. The result of his work was, the teeth were forced out to a decided labial inclination. That was the condition when the patient came to me, and this is the model of the face. (Fig. 4.) It could not be otherwise very well, because the teeth are quite protruding, the lower lip lying under the incisal ends of the upper teeth. All I did was to extract the first bicuspids and apply ordinary force to close up the space. (See Fig. 5.) I thus removed the facial deformity. (See Fig. 6.) Fig. 7 is from

a photograph taken some time after the completion of the operation. When I came to look at the face of the other case I found it was depressed over the area of the upper incisors, and that I would require all the teeth in the arch to fill out the proper con-



FIG. 7.



FIG. 8.

tour. (See Fig. 8.) The completion of the operation is well shown in Figs. 9 and 10.

All I did was to extract the first bicuspid and apply ordinary force to close up the space. (See Fig. 9.) I thus removed the facial

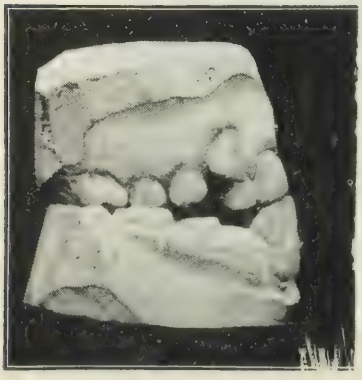


FIG. 9.



FIG. 10.

deformity. The point I wish to make is this: When a case comes to a dentist he will too often look at the upper jaw alone and he will frequently send me a model of the upper jaw alone and ask me how it should be regulated. These two cases present a fair

illustration of the impossibility of determining the proper course of treatment without the ability and opportunity to study *all* the relations.

[Dr. Case gave a lengthy and interesting lecture, covering every variety of facial imperfection that is produced by a malposition of the teeth, which he illustrated with an exhaustive exhibition of charts, models and apparatus.]

PROCEEDINGS OF SOCIETIES.

Chicago Dental Society.

March meeting. The President, Dr. J. E. Hinkins, in the chair.

Dr. George W. Haskins read a paper entitled "Report of a Case of Orthodontia Combined with Bridge Work."

DISCUSSION.

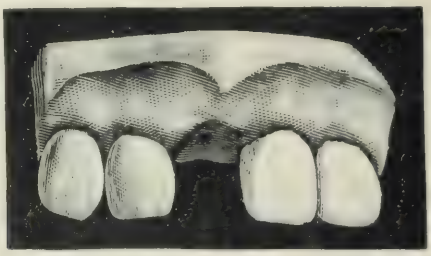
Dr. A. E. Matteson: *Mr. President:* I was favored with a perusal of Dr. Haskins' paper over a month ago, when it was due to be read, at the date of our clinical meeting. At that time I made some notes thereon and when the reading was postponed laid them aside so carefully that I was unable to find them this afternoon.

I wish to compliment Dr. Haskins upon his paper and especially upon the ingenuity in devising some of his appliances, which are original with himself. The case he has presented is undoubtedly an extreme case of irregularity caused by injudicious extraction, and had the doctor been able to furnish a full history, it would show that this had been done to remedy the malposition of one or more teeth.

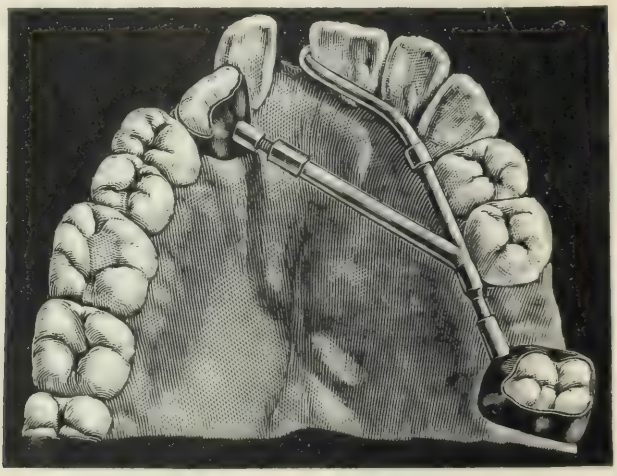
Referring to the lower maxilla, there is nothing but what is commendable in the treatment of the irregularity. A plea for simplicity impels me to offer a few criticisms. For instance, why employ those nuts anterior to the tubes, on the lower retaining appliance? They are practically of no value there. They might be used in the rear of those back of the tubes, to serve as locknuts, but even *those* can be easily dispensed with, and as good results obtained by annealing the ends of the wire, pass them through the tubes, bend one end at right angles or in the form of a hook close to the tooth, then with a pair of pliers draw the

other as tight as the patient can stand, then bind as with the first. This may be repeated later if desired.

In the treatment of the upper maxilla he has introduced a couple of very ingenious appliances—that of the tubing on the ends of his strap—used for retruding the cuspids—into which the



headed screws pass to engage with the anchorage. The only objection would be the enforced employment of soft solder. I have been using a ribbon formed by inserting a German silver wire in rolling mill and rolling back and forward until the desired length and thickness was obtained, threaded the ends, which were left round, and then fitted nuts.



I am very much pleased with the appliance the doctor has presented for drawing the roots of the incisors together without their tilting, and had the natural crowns been on the roots this or some similar device would have been absolutely required. The device is excellent but the objection to its use in this case is that it was not demanded. One or both of these roots had been for a long time in an unhealthy condition, had been brough

into a healthy condition. There is more or less risk in moving a tooth with a devitalized nerve pulp. It cannot be expected that these roots will ever become firmer by the change of position, rather the contrary; and they are expected to perform more than their normal function. *A simpler* and I believe a better method would be by shaping the ends of the roots and make porcelain double faced crowns for each root and if the band and post came in the middle between central and lateral, gum body would cover and the structure be stronger than if under one facing.

I present this case in which the crown of a right central incisor had been lost, and there was not enough room to pass a smaller lower lateral incisor between the lateral and left central; the right cuspid occluded within the lower arch. The patient was twenty-one years old. At the earlier stages I used a shorter jackscrew extending from right cuspid to space between the left cuspid and bicuspid, with the tube of the jackscrew resting in front of the tube on the bar. This is a cast of the case when I first commenced it, and this is the position I obtained when I was ready to put the crown on and retain it in position. I had the patient promise to come in and let me take an impression of the whole thing after the gutta-percha had become hard, but she did not do so.

Dr. C. S. Case: Outside of a great variety of little things that will always suggest themselves to one's mind, I do not see that the essayist has really left a great deal for us to discuss. We have listened to a carefully written history of a single, somewhat difficult, but very rare case of the treatment of irregularity of the teeth. Dr. Haskins has succeeded very admirably. You have seen how a skillful operator has brought to perfection, to artistic beauty and utility, a case which was a good deal like a chaos, in contradistinction to the former operations that were performed by the more unskillful dentists. I desire to compliment the doctor on the skillful termination of his case and the masterly manner in which he has presented it to us. If I were to criticise the paper, it would be to decry the seeming need of entering into such lengthy and minute details of a single case in practice that is so very rare that none of us will ever see the like of it again. If it had been a case of frequent, or even of occasional occurrence, or if the doctor's method of applying force had been superior to others that had formerly been applied to other cases of a similar character, it would be

useful to us in the future. Again, if his method of applying force had presented some of the broad principles of the application of force to teeth, then I should say that a too minute description of every movement could not be given. Furthermore, if there was but one way in which any case could be regulated, we would want to know all about it, under the bare possibility that we might meet with a similar case at some time or other. But, as a matter of fact, show me any case of irregularity of the teeth, and I will tell you one of six ways in which force can be applied to bring about a correction of the irregularity. We really have had altogether too many histories of cases of irregularities in the past. Our periodicals and text-books are teeming with the histories of cases of irregularities of the teeth, to which dentists turn and thumb over the pages to try and find something similar to their own, which in reality is dissimilar, although it would seem to be the same from the descriptions. I believe these cases have done more harm to the real progress of orthodontia than anything else. If we could spend this time in educating ourselves in the basic principles of applied mechanical forces, upon which everything depends for the successful practice in this branch of dentistry, it would be a great step in advance, as compared to hearing and reading the histories of special cases. I often say to my students that I would rather have them know how to move a single tooth in every direction, how to apply force to that tooth scientifically so as to move it in every direction, than to know by heart all the histories of all the cases that have ever been written. Then they would be able to cut loose from the stereotyped plans of Tom, Dick or Harry, or Dr. Case, and originate for themselves. They could commence to think for themselves, and that is absolutely what is necessary. If the paper teaches us anything, it teaches us to take advantage of all our opportunities, and, as the doctor has shown, one of our opportunities, in order to bring our work to a more perfect and artistic result, is to move teeth into possibly a better position; not simply in this case, but in a great variety of instances that arise in our practice. It is unfortunate that so many dentists do not improve all their opportunities. They are confined to narrow limits. I do not say this particularly of the members of this society because you are all skilled gentlemen, but a large proportion of the men who practice dentistry are confined to narrow and limited areas. Patients present themselves and dentists proceed to treat

ill and crown teeth, simply because the patients ask them to do it. Dentists do a variety of things simply because they are asked to lo it inside of narrow limits. Let me instance one or two cases hat have come to me since I have come to Chicago.

First, the case of a young lady with a wide space between the central incisors. She was a teacher of vocal music, and this space had been gradually widening until it interfered with her enunciation, a very important thing in her vocation. She had applied to a very good dentist in Chicago, who had induced her to have an artificial tooth, which was slipped in between the two central incisors, and held in place by a backing of rubber on the lingual side of the long, narrow tooth. It corrected the enunciation, but its appearance was rather unsightly, to say the least. She came to me thinking that this possibly might be corrected. It was one of those long standing cases which perhaps most of you have seen hat are not as difficult to correct as they are to retain. The teeth were brought together, which really corrected the shape and occlusion of the entire arch, and she is wearing now a gold bar extending from one tooth to the other, retaining the whole in position.

Last Thursday a young medical student presented at the college with a similar condition. He told me that a good dentist in his town had for some time been trying to induce him to have he central incisors cut off, to permit the putting in of a bridge f four teeth. Now, the dentist had not taken advantage of his pportunities in this case. The young man will have the space losed, and a bar attached to hold them as in the former case.

I know a lady, a patient of one of our skillful dentists in this ity, who is wearing an artificial lateral incisor attached to an locked perfect lateral, it being supported by a band attachment. f course, the appliance answers every purpose, but any one who is n expert can see at once that it is an artificial tooth. That dentist did not take advantage of his opportunities by forcing out that teral incisor with a jackscrew and doing away with the artificial ppliance. A week ago last Thursday two cases presented at the ollege which illustrates this subject very well. One was a boy, hirteen years of age, with a decided protrusion of the upper teeth. ome dentist-had filled the first bicuspids with two large amalgam llings. Why fill those bicuspids? This is a thing that I have en very many times among dentists. They do not recognize the ct that they are dealing with a case of decided protrusion. They

proceed to fill the teeth because the patient has come for that purpose and they feel that it is their business to do so. Why do they not take advantage of the opportunity and correct those teeth?

The other case was that of a young lady whose teeth were comparatively well taken care of, but who had two central incisors that were quite irregular. The right central incisor was protruding somewhat; the left central incisor retruded in so far that it was inlocked. Upon close examination of the retruded tooth, it was found that it was not shaped like the other central incisor; it was smaller, and it occurred to me that it was a supernumerary central incisor that was retarding the eruption of the regular central incisor. So she was sent to Mr. Fuchs, in the Schiller Building, who is a specialist in X ray photography, and she returned with a photograph showing a central incisor that I suspected, and which will be brought down to position after extracting the supernumerary. A little more than two weeks ago a young lady presented at my office with two lateral incisors on the upper right side, one of which was quite imperfect in shape. It was not like the adjoining one, and one feature in regard to it was a groove running transversely across the tooth, whereas the lateral incisor that stood outside of it was similar to the one on the opposite side. Another feature about the case was the right upper cuspid had not erupted, and it occurred to me that this imperfect lateral incisor may have forced itself into the arch and prevented eruption of the cuspid. She was sent with my assistant to Mr. Fuchs, and they returned with a perfect skiagraph of the cuspid lying inclined near the roots of the bicuspid teeth. I have brought with me the models of the last cases mentioned. There was no indication whatever in either case by any prominence of the arch, etc., to show there was a tooth imbedded. I have brought these models here to describe to you a method of obtaining a perfect skiagraph that was suggested to me by Dr. Kells, of New Orleans. These skiagraphs are imperfect because Mr. Fuchs had the sensitized celluloid pieces supported against the palatal surface of the mouth by holding them there with the finger of the assistant while he projected the rays. You can see that this plate lying so inclined to the direction of the rays the teeth were projected along its surface as the shadow of a man would be projected along the ground when the sun is setting. It occurred to me that it would be better if we could support the plate so that it would stand parallel with the teeth, and I devised

this little plate holder, made upon a partial impression tray. There are open tubes attached for holding the plate, and soldered to the under surface are two drop wires that support corks. With the impression of a few occluding teeth in modeling compound to guide it to place, the patient can close the teeth upon the corks, holding it perfectly still, with the sensitized plate in perfect position.

Possibly all of you may not have heard of Mr. Fuchs, in the Schiller Building, who charges only $3 for each skiagraph. It is cheaper to pay this amount than it is to do this work one's self.

Dr. D. C. Bacon: I do not know that there is anything I can add to what has been said. Dr. Matteson stole my thunder. I think the plan described is a most admirable one, and I have in a few instances practiced it myself. I have one case in which I placed three teeth on two roots, and thought it was much more satisfactory both to myself and the patient than the movement of the teeth would have been, because in this case they could not be moved without giving a bad inclination. I recall another case in which I placed two teeth on one root. The root was one that had no position apparently, it being bent at almost right angles, so that I was a little bit afraid of trying to regulate this case. The crown had decayed to the root nearly, and the root stood obliquely to the angle of the other tooth, making it a difficult case to straighten.

Dr. Haskin's paper was very nicely prepared, although I doubt the wisdom of presenting an isolated case to the society in this way. It is very difficult for any one to follow the minutiæ of such a paper during the reading of it, or even by the use of charts. It is a paper that would be more valuable to one after it is printed in our dental journals, and then we can study and work out the method just as we would a problem in mathematics. There were several operations that were, to me, very interesting and quite original, especially the moving of the central incisor without changing the inclination of the root.

Dr. Haskins (closing the discussion): There is but little to say in closing. But with regard to the method of bridging suggested by Drs. Matteson and Bacon, I do not think in this case that it could have been made as nearly self-cleansing, or as presentable in appearance as the method pursued; the right central root was in immediate contact with the cuspid, and a small

lateral could not possibly have covered and concealed the gold of a cap large enough to fit that root.

Dr. Matteson's suggestion of bending the ends of the retaining wires instead of using nuts is certainly simple and effective, but in this case I needed the nuts to complete the operation by drawing the teeth, so that they came in immediate contact with each other.

I cannot entirely disagree with Dr. Case in his criticism of the character of the paper as a paper to be presented to the Chicago Dental Society, but would say in reply that I had hoped the paper would call out in the discussion by its suggestion, the general principles which he referred to.

Clinics and Exhibitions at Thirty-fifth Anniversary Meeting of the Chicago Dental Society.

Bacteriological exhibit. Drs. Cook and Collins, Chicago.

This exhibit consisted in the showing of the different culture media, a great variety of microörganisms, and the growing o plate cultures taken from the air and from the mouth. Bacterio logical and pathological specimen slides were exhibited in grea numbers. One of especial interest was an epithelioma, take from the apex of the root of a lower central incisor. The differen methods of staining bacteria and tissues were plainly shown, an the advantages and disadvantages of each demonstrated. histological slide showing karyokinesis in cell division attracte much attention.

Photographs and photo-micrographs. Exhibit of Dr. F. H Noyes, Chicago.

About sixty highly magnified and beautifully executed phot graphs and photo-micrographs were exhibited by Dr. Noyes, t former embracing the development and adult formation of vario oral structures, the teeth, alveolus, glands, membranes, cap laries, etc., and the processes of breaking down and rebuilding tissues, and the latter, the process of microörganic destruction tooth substances. Dr. Noyes' exhibit undoubtedly would ha received much more attention had it not been so obscurely locat in the clinic rooms. It certainly was entitled to greater consp cuity.

Taking plaster impression of face. Clinic of Dr. C. S. Case, Chicago.

The clinic demonstrated the ease with which accurate facial impressions may be taken. One side of face from median line backward, including the whole outline of the head if desired, is thoroughly coated with vaseline. The hair, eye lashes and whinkers are heavily coated and rubbed down smooth. The ear is packed with cotton and the plaster is then rapidly built over the surface; two assistants being required to prepare plaster.

An operation to increase stability of artificial dentures. Clinic of Dr. B. F. Eshelman, Chicago.

Operation indicated when difficulty is experienced in fitting plates, owing to the presence on the ridge of a flatulent, flaccid, movable fold of gum tissue, a condition often met with where the use of vulcanite or other bases has been prolonged after resorption of the alveolar process has taken place, and which, while perhaps not interfering with adhesion of the plate while jaws are at rest, when masticating, owing to the mobility of the ridge, or fulcrum of lever, interrupts vacuum and suction.

Dr. Eshelman's operation consists of carefully protecting lips and other parts with gauze or napkins, leaving part to be removed exposed and dry, then obtunding with ethyl chloride, and excising with a pair of curved scissors all the flatulent portion, taking care not to completely expose alveolus. Hæmorrhage may be profuse but is controlled by ordinary methods. Treat antiseptically. If patient is wearing a plate, line same over excised part with antiseptic gauze, often moistening it with some good antiseptic medicament. If not wearing a plate cause to be used frequently an antiseptic wash. Healing takes place rapidly. In many instances impressions may be taken immediately.

Treatment of pyorrhœa alveolaris by replantation. Clinic of Dr. J. E. Keefe, Chicago.

A method of treating pyorrhœa, when the disease has reached so advanced a stage as to preclude the saving of the teeth by ordinary means.

Patient, a lady thirty-seven years old. Teeth replanted—first and second lower right bicuspids. Second bicuspid very loose, on labial surface the gum had receded one-third, and on lingual two-thirds the length of the root. Process slightly absorbed on labial side, and entirely so on lingual surface. Upon extraction the apex of

the root was found to be partially absorbed and enveloped by deposits. A somewhat more favorable condition prevailed in relation to the first bicuspid.

Dr. Keefe had had the case under treatment for three weeks prior to clinical operation, during which time scraping, etc., had been practiced, but without indications of desired results.

When teeth were extracted they were immediately immersed in a saline solution (7½ gr. of salt to 1 qt. of distilled water), kept at a temperature of 90°. The teeth were then respectively placed in a hand vise specially constructed for holding teeth, the deposits carefully removed, and the partially absorbed root of the second rounded off with a bur. The apical foramina were then opened up, the roots dried for a few moments and the canals sealed at the apex only by the insertion of platinum wire plugs and chloro-percha. Anything may be used for this purpose that will hermetically seal the canal.

It is the practice of Dr. Keefe in the treatment of the six anterior teeth to open through the lingual side of crown and remove pulp, but with all the other teeth, if there are no cavities in the crown and the tooth is alive when extracted, he merely seals hermetically and permanently the apices of the roots. Just previous to replanting, teeth are soaked for five minutes in oil of cloves. It is seldom necessary to interfere in any way with the sockets from extraction to replanting. After replanting, the teeth are firmly held in place by bands which are made and fitted before extraction.

Hebert system of making seamless gold crowns. Exhibit of Dr. G. W. Schwartz, Chicago.

In this system the highly desirable features of perfect proximal contact and occlusion are established, beautiful bell shaped seamless crowns being struck up with but little more difficulty than is the ordinary cusp.

Surgical Clinic Held at the Chicago College of Dental Surgery, at the Thirty-fifth Annual Meeting of the Chicago Dental Society, February 3, 1899.

By Prof. Truman W. Brophy, M. D., D. D. S.

(reported by George E. Bratten, class '99.)

Gentlemen: The operation that I shall perform before you to-day is one by which I propose to restore the contour of the upper lip, the defect of which is the natural result of congenital harelip. This case was operated on a number of years ago for the closure of the harelip, but, as you will notice, there is a decided drawing up of the lip on the left side, where the former operation has been made, which has quite a disfiguring effect. The operations for the relieving of such conditions are numerous. In operations of this kind there are certain points to be kept in view: First, it is necessary to obtain union by first intention, and in order to accomplish this the edges of the incision made must be accurately brought together, and there must be no tension of the parts. It is also important that the red line of the lip should be even; this we shall attempt to accomplish. The patient being anæsthetized, I shall perform the following operation:

Operation. I first place a piece of gauze in the mouth so as to prevent the blood from passing down the pharynx, then with a sharp, narrow bladed scalpel I make an incision (the shape of the letter V inverted) directly through the lip, but not passing through the prolabium. I next separate the lip from its attachment to the gum, which will enable us to close the incision without tension; then the margin of the lip is grasped and drawn down until the edges of the incision approximate, making the line of sutures perpendicular, and there will be a slight projection of the prolabium instead of a notch as before. The parts are held in position by the use of silk coaptation sutures.

Treatment. The dressing of the wound should be as simple as possible; it should be dusted over with boracic acid or painted with iodoform paint.

Other cases were brought before the clinic, demonstrating what had been accomplished by previous operations, principal among which was that of a small child (female) five weeks old, which had a congenital double cleft palate and harelip. A model was exhibited (which was made from an impression taken before

any operation had been performed), showing the unusual width of the clefts in the palate. This case had been operated on two weeks before for the closing of the *hard palate*, which was found to be a success, as the parts had become thoroughly united. Later there will be an operation for the closure of the soft palate, also one for the closure of the harelip. This case was intensely interesting to all, as it clearly demonstrated what can be done by surgical procedure, for these poor unfortunate and afflicted children.

Report of Operative Clinics Held at the Chicago College of Dental Surgery at the Thirty-fifth Annual Meeting of the Chicago Dental Society, February 3, 1899.

By F. W. Stephan, D. D. S.

Dr. W. V-B. Ames, of Chicago, exhibited two large gold inlays for disto-occlusal cavities in lower right and left first molars. The one for the right molar was completed and cemented in position, the other was loose and in process of construction, thereby illustrating the means of obtaining bold contours.

Dr. Garrett Newkirk, of Chicago, demonstrated the treatment of a fistulous abscess from a lower left first molar. The peridental membrane was somewhat inflamed. Iodine and oil of cloves was sealed in the root canals to remain about two weeks.

Dr. H. Van Tassel, of Denver, Colo., demonstrated the use of a combination of iodoform and wax, equal parts, for filling root canals. It is melted by heat and worked into the canal. The doctor claims for this material ease in manipulation in filling fine root canals.

Dr. L. E. Custer, of Dayton, Ohio, exhibited an arc light attachment for the Custer electric oven, and demonstrated its usefulness fusing a small piece of porcelain. This ingenious device consists of two small carbons, held by a framework attached to the lid of the oven, and connected with the current so that the operator may at any time form an arc just outside the vent in the lid. This arc illuminates the interior of the oven, enabling the operator to see the work distinctly and to determine accurately and without strain to the eyes, just when the porcelain is fused. Dr. Custer considers this little device is quite as marvelous as the oven itself. Its value will be apparent to all who work porcelain

Dr. Charles L. Hungerford, of Kansas City, demonstrated immediate pulp extraction, using a spray of ethyl chloride to produce the local anæsthesia. Absence of sensation in the pulp is induced by the extreme cold produced by the spray. The living pulp was removed from an upper left second bicuspid. No pain was experienced by the patient except from the shock at the first application of the spray.

Dr. R. G. Richter, of Milwaukee, demonstrated pressure anæsthesia for sensitive dentine. A mesio-occlusal cavity in a lower right first molar was prepared without causing pain. The cavity was demonstrated to be sensitive before operating. Patient, Dr. D. M. Cattell, of Chicago. Method of procedure: A pledget of cotton saturated with the following solution was placed in the cavity; cocaine hydrochlorate, seven grains; ether, one drachm; alcohol, a few drops and a small quantity of potassium to make the solution alkaline. The cavity was then covered with a large piece of unvulcanized rubber and held firmly to seal it thoroughly. Pressure is produced by the volatilizing ether which drives the cocaine into the tubuli, producing anæsthesia. The small amount of potassium in the solution neutralizes the products of any microorganisms which might be present.

Dr. C. H. Darby, of St. Joseph, Mo., demonstrated Dr. Jenkins' system of porcelain inlays, on cavities in extracted teeth.

A piece of No. 30 gold foil was burnished to fit the cavity, which was without undercuts. This was carefully removed, trimmed and invested in a paste consisting of powdered asbestos and alcohol, in a platinum cup attached to a long handle and especially designed for the purpose. The body mixed with alcohol was then filled into the impression and fused in an oven and using a gas blowpipe, the apparatus of Dr. Jenkins' invention. As the material shrinks it was packed and fused several times till the proper contour was obtained. The gold foil was then stripped from the porcelain and the piece set in the cavity with cement.

The features of the system as described by Dr. Darby are: First, the low fusing body making it possible to use gold for obtaining the impression of the cavity. This is considered a great advantage, as gold can be much more easily burnished to fit a cavity than can platinum. Second, the æsthetic possibilities, including stability of color and wear in the mouth.

Dr. S. T. Kirk, of Kokomo, Ind., inserted two noncohesive

gold fillings, one in an occlusal cavity in a lower right second molar, the other in a mesio-occlusal cavity in a lower right first molar. Patient, Mr. C. E. Shidler, Class '99, C. C. D. S.

Gold foil No. 4 (No. 5 preferred) was rolled into dense cylinders and wedged into the cavity, leaving only ends exposed and protruding somewhat from the cavity. When the cavity was full these ends were burnished down and the surface polished. This leaves a hard surface that will not flake off.

The advantages of this method, advanced by the clinician, are a better adaptation of gold to walls and margins than can otherwise be obtained, and a great saving of time.

Dr. C. H. Goodrich, of St. Paul, inserted a gold filling in a simple proximal cavity in the distal surface of an upper right lateral incisor, using cohesive gold cylinders.

Dr. T. E. Weeks, of Minneapolis, gave a table clinic, demonstrating some points in the construction of shell crowns.

CLINIC OF DR. GILMER.

Dr. Thos. L. Gilmer gave the following clinic in oral surgery:

Gentlemen, I have varied my clinic a little from the ordinary, and to-day propose not to perform an operation before you, but to show you the result of my treatment of a number of, what I consider, interesting cases. Should I perform an operation as I did here last year, for the Odontographic Society, a few of you could see a little of what I would do, the others practically nothing, as you realize it is almost impossible to get a view at a distance from the operator that is worth while. Besides, the result of an operation, with a description of the performance, is frequently quite as interesting as the operation itself.

I wish first to call your attention to this man. He was a patient of Dr. J. S. Reed, of this city, and was referred to me by him. The history in regard to the case as far as we know it, is as follows: There was an impacted inferior third molar on the left side of the jaw, with the usual inflammation, which was periodic, and finally as a result there was established necrosis of the jaw on that side. The impacted third molar had been extracted a short time before I saw the patient. The most remarkable part of the subsequent history of the case is that in less than eight weeks after the first inflammatory movement, so far as we have knowledge, I removed the entire jaw on the left side, it having been exfoliated, that is, the line of demarcation was marked and the part

was loose and I removed it. This is the bone just as it was when removed. It includes, as you perceive, all of the jaw from the median line back to and including the ramus.

When the patient first presented to me I found that pus was exuding from the gum all the way from the incisors back to the posterior portion of the jaw, and upon probing I found that there was a large pocket containing fœtid pus at the angle, which extended forward along the base of the jaw to mental foramen. The treatment was this: The pockets were irrigated with oil of cassia in warm water, three drops to a glass of water to remove the greater bulk of the pus and the loose necrotic material. There was a great deal of odor and by the use of the cassia the odor was easily removed. We followed this by irrigating thoroughly with pyrozone. The pyrozone was used only as a detergent. Then oil of cassia in water was again used as a disinfectant and stimulant and the pockets packed with iodoform gauze. This treatment was repeated daily, alternating the last application of cassia water occasionally, with aromatic sulphuric acid, full strength.

Another interesting thing, to which I wish to call your attention, is the almost entire reproduction of the bone, so that there is but slight disfigurement. There was a sufficient amount of bone laid down by the periosteum under this treatment during exfoliation, to preserve the contour of the face; that is, so as to not allow the healthy side of the jaw to pass over to the opposite side. You see we have a perfect occlusion of the remaining teeth of the lower jaw with those of the upper. In some cases we find that the dead bone is exfoliated before sufficient amount of new bone is formed, and unless some mechanical appliance is used to hold it, the jaw will pass from one side toward the other, as there is nothing to prevent it. But the activity in the destruction of bone in this case was only equaled by the activity in the deposit of new bone.

You see that there is quite enough of bone deposited, not only to restore the contour, but to carry a plate which he wears with comfort. The plate was made by Dr. Reed.

It seems almost incredible that this amount of bone could be destroyed and thrown off and new bone to this extent built up in so short a time.

Question: To what do you attribute the extensive necrosis?

Dr. GILMER: Infection and inflammation from the impacted third molar. We have no history of anything else in the case. In a majority of these cases it is months before there is an exfoliation, sometimes a year, or even more.

Question: Was the tooth exposed so that it could be got hold of easily?

Dr. GILMER: As I understand it, the gum was overlying about two-thirds of the tooth.

Question: Would it be possible for an inflammation, caused by an impacted third molar, to cut off the nutrition of the jaw?

Dr. GILMER: Yes, I think so.

Question: What is the nerve supply now?

Dr. GILMER: It is supplied by proliferations from some of the branches of the fifth pair.

Question: I would like to know how long the young man has worn that plate?

Dr. GILMER: Dr. Reed can answer that question.

Dr. REED: I made the first plate for him about one year ago, and he wore that until last fall. During the fall and winter months he has been wearing the one he has now.

The next patient I will present for your consideration is this little boy. It is a very rare thing that we find a congenital median cleft in the lip. There are only a few cases on record of a median cleft. This child's lip was cleft at the lower border at least one and one-half inches, as some of you will testify who assisted me in the operation.

The operation should have been performed when the child was very young, but owing to his physical condition at that time, it was delayed until he was three years of age. I wish to call your attention to the fact that there is scarcely a scar left and I would like a few of you to see how perfect in shape the lip may be made by care. For the cure of this case, I performed what is known as the Garretson operation; that is, I pared the parts, giving the elliptical form to the flap so as to bring down and project the anterior portion of the lip beyond what I intended it to be after cicatrization, calculating that the shrinkage would bring it to a normal shape. I also made the parings V shaped with the base of the V looking toward the jaw, dissecting the lip from the jaw to relieve tension in approximating the flaps. Of course, the nice part of this work is to accurately calculate to what extent the V shaped paring

is to be carried, and how the flaps are to be cut to properly shape the border of the lip. If we get too much projection, it is easy enough to cut off a little, but if it is not sufficient, then we have the disfiguring notch. Silver sutures were employed extending from the commissure of the lip on the one side to the commissure on the other. These sutures were passed through lead plates when they emerged from the integument and fixed by lead buttons being compressed upon them. The edges of the flaps were coapted by horsehair, the silver sutures relieving them from tension.

The next patient that I wish to present to you, gentlemen, is one with a fracture of the lower jaw. This man's jaw was fractured by a fall last August. The line of fracture was between the cuspid and the first bicuspid teeth. I did not see the patient until October. Immediately after the accident the parts were put together and secured by the Angle bands. There was infection from some cause, and as a result there was nonunion with a good deal of necrosis following. When I first saw the patient the face was very much swollen and indurated, and the fragments of bone were perfectly loose. Since there was necrosis, we could not expect union until the patient was relieved of this condition. I put wires around the teeth on both sides, above and below, securing them to the necks of the teeth by twisting tightly. I occluded the teeth perfectly and twisted the wires of the upper jaw to those of the lower, and immobilized the jaw. We then treated the necrosed bone through an external opening which I formed when I first saw the patient, and kept the parts in as nearly an aseptic condition as possible, removing the dead pieces of bone as they were thrown off, packing the wound with iodoform gauze. We did not get a union at once and did not expect it. After the necrosed bone had been fully exfoliated and the parts had become normal, I freshened the edges of the bone and brought them together and immobilized as before, and we have as a result a perfect osseous union. There is perfect occlusion of the teeth, and nothing to indicate the former condition except a slight scar on the base of the jaw, which is not now perceptible at a few feet distance.

The next case that I present for your consideration is one of hypertrophy and induration of the gums. It is not the only case of the kind I have seen, but I have seen very few such. We sometimes find hypertrophied gums almost covering the teeth, but we rarely find hypertrophied gums where there is an appearance in

color similar to the normal. You see on this side of the upper jaw all the way back on the buccal side from the lateral incisor this great hypertrophy, completely covering the molars. You see a similar condition on the opposite side. We also find it in the lower jaw posterior to the six year molars which have been removed. The ordinary hypertrophy of the gums which is soft and spongy is amenable to treatment other than surgical, but I do not believe that there is any treatment that will suffice in this case other than surgical.

We learn from this history of the case that the hypertrophy commenced about two years ago and has constantly increased since then. We also learn that a sister of the patient has a similar condition, also two cousins, all females, have a like enlargement of the gums. The patient tells me that her mother died young and that she does not remember her appearance, but that pictures of the mother show the appearance of an enlargement of the face about the mouth.

Dr. F. V. Yorker, of Chicago, inserted a large gold filling in a disto-occlusal cavity in a lower right second bicuspid. Cohesive gold pellets were used throughout the operation, and the use of hand pressure in these difficult operations was well demonstrated.

A chin rest designed by Dr. T. H. Stevens, of Cleveland, Ohio, was used to steady and support the jaw. This was pronounced a great comfort to both operator and patient. It is especially adapted for use in long operations on the lower teeth and when the jaw is liable to dislocation from opening the mouth too wide.

Dr. E. R. Carpenter, of Chicago, filled a mesio-occlusal cavity in an upper left first molar, using the Ladmore-Brunton clamp and matrix. The matrix consists of a thin German silver band which surrounds the tooth on three sides and is held in place by the clamp which clips into two holes in the ends of the band.

Dr. C. A. Flower, of New Bethlehem, Pa., inserted a gold filling in a mesio-occlusal cavity in a lower left first molar, using Flower's gold. The doctor claims for this gold the property of retaining its cohesiveness under various circumstances of time and exposure to atmosphere and moisture. He uses the gold without annealing.

Dr. C. C. Chittenden, of Madison, Wis., inserted a mesio-occlusal filling in an upper left first bicuspid, using unannealed

gold pellets till the cavity was about three-fourths full, after which finishing with thoroughly annealed gold. A thin steel matrix was used and the gold was wedged against it, thus spreading the teeth and obtaining contour without previous wedging. Ney's soft foil No. 3 was used.

Dr. W. A. Price, of Cleveland, Ohio, demonstrated the principles of construction and workings of milliameters and their adaptation to the dental practice. The apparatus exhibited was very complete, including from the simplest form of this instrument to the most complex and reliable, one instrument being so delicate as to detect the $\frac{1}{1000000000}$ of a milliampere variation in the current.

The point brought out in this clinic was that the milliameter adapted and used for ordinary testing and scientific work is not as well fitted for the dentist as would be an instrument having greater internal resistance and a much finer gradation of measurement.

Dr. B. D. Wikoff, of Chicago, demonstrated Dr. Jenkins' system of porcelain inlays.

This porcelain can be fused directly on gold by the heat of the ordinary gas blowpipe. An impression of the cavity is taken in gold foil No. 30. This is invested, filled with porcelain body and baked in a very simple apparatus especially designed and adapted for the purpose by Dr. Jenkins. The gold foil is then stripped off, and the porcelain set in the cavity with some good cement.

The value of the system lies in the combined qualities in a porcelain, of a low fusing point with strength of material and stability of color to withstand the conditions existing in the mouth.

Dr. C. N. Johnson, of Chicago, inserted a tin and gold filling in an extensive occlusal cavity in a lower left second molar.

Tin No. 20 (No. 4 preferred) and gold No. 4 were used and rolled together to form a rope which was folded back and forth into the cavity, leaving each fold to protrude a little from the cavity. This was afterward burnished down and the filling finished.

The time recorded was one minute, thirty seconds, to insert the filling ; one minute, thirty seconds, to finish ; the entire operation taking about seven minutes.

This filling is considered preferable to amalgam and is especially adapted to children's teeth.

The cavity filled was not a typical case for tin and gold but served well for the demonstration.

Dr. A. J. Prosser, of St. Louis, exhibited cavities filled with a combination of cohesive and noncohesive gold, as follows: Roll one-half to one sheet of No. 4 gold foil into a rope and cut into cylinders a little longer than the depth of the cavity. Anneal only one end of each cylinder and wedge into the cavity as is usually done with unannealed gold. Dr. Prosser claims that the unannealed portion gives easy working qualities, and the annealed ends hold the gold together and prevent flaking off at the surface, as is sometimes the case when unannealed gold alone is used.

Dr. Prosser also exhibited his method of swaging gold inlays of gold No. 30 gauge, strengthening with solder and setting with cement. This is considered to be good practice where cavities are very large and teeth sensitive.

Dr. J. A. Dunn exhibited on models the Dunn cervical clamp No. 2. By a clever device the two jaws of this clamp are adjustable as to distance of opening and tension. By protecting the gums with a pad the one jaw can be placed high over the one side without causing injury, and thus enabling the other jaw to be carried high under the gingival margin without danger of slipping.

Dr. Dunn also exhibited his "bridle crown" for bicuspids. This consists simply of a band around the bicuspid with a strip crossing through the fissure, and is designed to support a dummy facing for æsthetic purposes only, and to avoid the devitalization or cutting away the bicuspid.

Dr. E. K. Wedelstaedt, of St. Paul, exhibited an electric outfit containing an electric headlight and reflector and a mouth lamp, made by the American Endoscopic Co. The uses of the various parts for lighting purposes and for diagnosis were demonstrated in a darkened room.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITOR: A. E. MOREY, PH. B., D. D. S.

HURRAH!

By reading the undermentioned you will understand what we mean:

4. An act to "Amend an Act Concerning Corporations," which provides that the attorney-general may file a bill in chancery in the name of the People of the State of Illinois, against any corporation authorized to confer degrees, diplomas, or other certificate or certificates of qualification in the science of medicine, pharmacy or dentistry, which conducts a fraudulent business or abuses, misuses or violates the terms of its charter, in any court having jurisdiction of the corporation and subject matter of such bill, for an injunction to restrain said corporation from conducting its business fraudulently or abusing, misusing or violating the terms of its charter, and also for the dissolution of said corporation, and thereupon it shall be the duty of the court in which said bill is filed to grant such injunction and to hear and determine the same as in other cases in chancery.

The enforcement of this law will summarily put an end to the operations of the "diploma mills," which have disgraced the State at home and abroad for many years.

For years Illinois has been cursed with the easy incorporation of "colleges" which conferred degrees for money considerations only. We hope that other States and countries will take notice that this crying evil will be stopped at once.

KEEPING THE TEETH CLEAN.

A year or two ago the editor wrote a paper on the "Drug Habit," and one on "Drug Toleration," and another on "We Thought So When We Wrote It," all intended for the public good, protesting mildly against the misuse of drugs, tooth pastes, tooth washes, brushes, etc. It seems that the above articles have fallen

beneath the eye of A. W. Beach, D. D. S., of Iowa, who feels much injured at the teaching in the aforesaid papers (see *Dental Digest*, Vol. V., page 227). He says: It is not my intention to take any new or startling position on the subject in hand (Keeping Teeth Clean) but rather to counteract as far as possible some of the evil effects of statements made some months ago in THE DENTAL REVIEW, by its worthy editor, Dr. A. W. Harlan. In the article referred to Dr. Harlan vigorously attacks the use of the tooth washes, pastes, powder, and antiseptic mouth washes, and refers to the toothbrush as "one of the abominations of civilization." We have reread the articles referred to (see DENTAL REVIEW, Vol. XI., page 951 and Vol. XII., pages 3 and 69) and fail to see any *evil* effects that might come from following strictly the lines of teaching.

The writer (Dr. Beach) says his comprehension is limited, which is only too apparent in reading his article, although it is well meant. The prominent thought in all of the articles referred to was the misuse of agencies (drugs, etc.) in oral hygiene. We still think that the vast majority of people are better off without the two or three times daily use of antiseptic mouth washes or the harmful misuse of brushes. Hygiene of the mouth means hygiene of the whole body, and no amount of special, local, antiseptic washing of the oral cavity will render it immune from caries at all ages. Dr. Beach should read Dr. J. L. Williams' latest article (*Dental Cosmos*, Vol. XLI., page 317) and a few good books on dietetics and hygiene, instead of attempting to criticise an author on a subject which he is discussing not for the good it will do, but to make it appear that he is ridiculous. More papers are needed to stop the wholesale drug taking of the American people, and still more on preventive medicine and public hygiene. The Dr. Beaches and others who cling to the idea that all surfaces are wholesome and clean because they have been stimulated by drugs must be taught that nature abhors any thing or substance that interferes with normal secretion or excretion. We fail to see the benefits to be derived from the use of drugs in the mouth when not needed to correct something abnormal. We protest against the drug habit, the tobacco habit and drink habit, as well as against all pernicious habits that injure health of body or of mind.

MEMORANDA.

Tin matrices are very useful.

A dental school will soon open in Lyons, France.

Porcelain, it seems, is going to have its day at last.

Dr. E. S. Sawyer, of Chicago, died Wednesday, April 26, 1899.

Dr. W. G. Clark, formerly of Cedar Rapids, is now located in Chicago at the Lakota.

Dr. W. E. Griswold, of Denver, was a visitor to the State meeting held in Chicago.

If you have any historical memoranda send it to Dr. Charles McManus, 80 Pratt Street, Hartford, Conn.

The American Medical Association will meet in Columbus, Ohio, June 6, 7, 8 and 9. Section on stomatology has issued a good programme.

Drs. L. C. Bryan and W. Mitchell were appointed delegates to the meeting of the N. A. D. F. at its next meeting to be held at Niagara Falls.

THE NEBRASKA STATE DENTAL SOCIETY.

The next meeting will be held in York, May 16-19 inclusive.

The Pennsylvania Board of Dental Examiners will hold their next examinations at the University of Pennsylvania, beginning June 20, at 9 A. M.

R. HACY, *Sec. Pro Tem.*

Dr. J. Hayhurst, of Lambertville, N. J., is dead, at the age of eighty. Dr. Hayhurst wrote the history of dentistry for the World's Congress, which was never published.

PROPHYLAXIS AGAINST INFECTION.

If you are about to examine a septic case or one in which you suspect syphilis, wash your hands in vinegar or dilute acetic acid, and you will soon discover by the smarting any little scratches or abrasions in your skin which might become the starting points of infection.—*Medical Sentinel*, September.

IOWA STATE DENTAL SOCIETY—OFFICERS FOR ENSUING YEAR.

President, C. R. Baker, Davenport; Vice President, C. Thomas, Des Moines; Secretary, J. C. Brounlie, Ames; Treasurer, W. R. Clack, Clear Lake.

Next place of meeting Dubuque, May, 1900.

LOCAL ANÆSTHESIA.

℞ Cocaine hydrochlorat.... ..... .04 cgm.
Spartein. sulphat..... .05 "

Dissolve at time of using in one or two cubic centimeters of boiled water.

—*Bagot.*

NEURALGIA.

℞ Ichthyol..... ..... 3 i.
Mercurial ointment..... ..... 3 i.
Chloroform..... 3 vi.
Spirit of camphor..... 3 vi.

Shake well before using, and rub over the affected part. —*Eulenburg.*

AN AGREEABLE ANTISEPTIC DENTIFRICE.

℞ Salol..... ..... gr. xlv.
Ol. anisi
Ol. geranii. .....āā ℥ viij.
Ol. menth. pip..... .... ℥ xv.
Alcoholis..... ..... ℥ v.
M. S. Dentifrice. —*Nogue.*

EAR ANÆSTHETIC.

℞ Cocaine hydrochl.,
Phenol,
Menthol..... ....āā 1
M. S. Apply to the tympanic membrane after incision.

The internal surfaces may be rendered anæsthetic by means of a long syringe carrying two or three drops of a one-tenth per cent solution.—*Bonain.*

On the 18th of March M. Picard, the Director General of the Paris Exposition, officially appointed the Committee of Organization of the International Dental Congress, as follows: MM. Lecaudey, Président d'Honneur; Ch. Godon, Président; Dr. Queudot, Vice Président; Ducournau, Vice Président; Dr. Martin de Lyon, Vice Président; Schwartz, de Nîmes, Vice Président; Viau, Trésorier, Dr. E. Sauvez, Secrétaire General; Burt, Secrétaire; D'Argent, Secrétaire; Hivert; Secrétaire; Dr. Maire, Secrétaire; Martinier, Secrétaire; Siffre, Secrétaire; Rodolphe, Trésorier-adjoint.

Dr. E. SAUVEZ,
Le Secrétaire General.

The committee met on April 12 under the auspices of Dr. Gariel, who was designated officially to preside over the first meeting.

MISSOURI STATE DENTAL ASSOCIATION.

The thirty-fifth annual meeting of the Missouri State Dental Association wil be held in Warwick Club Assembly Room, Kansas City, Mo., July 11, 12, 13, 14 1899. An interesting programme will be presented. Clinics new, novel and improved, will be given. Headquarters at Midland Hotel; rates, $1 and upward on European plan; $2 50 on American plan. Rates at Victoria Hotel $2 per day bath in each room. Rates of one and one-third fare on certificate plan on al railroads. A cordial invitation is extended to all members of the profession t attend.

B. L. THORPE, *Cor. Sec.*
St. Louis.

BASEL, SWITZERLAND, 1 STEINENBERG, April 10, 1899.

EDITOR OF DENTAL REVIEW.

Dear Sir: Much injustice has been done to American dental schools by th circulation of unfounded rumors of irregular graduations from reputable college where no facts are given which will sustain them. It should be generally known that the Foreign Relations Committee of the National Association of Dental Facu ties in America is ready and anxious to prosecute any college associated with i which in any way breaks its high and stringent published rules or any State law

Any complaints sent to Dr. James Truman, 4505 Chester Avenue, Philadelphi U. S. A., will be duly considered by his committee and reported to the associatio and any college will be disciplined if found guilty.

I am also prepared to give careful attention to any such cases and report them.

Those illegal institutions which have in former years sold diplomas in Europe have been, and are being prosecuted as fast as conclusive proof of such acts are in the hands of the proper authorities.

Dr. W. C. Barrett, of Buffalo, N. Y., has been especially active in hunting down these obscure swindlers who only advertise their wares in Europe.

The profession in Europe is earnestly requested to assist with any clear evidence it can produce or indicate where it can be found.

L. C. BRYAN,

Chairman of the Association of Advisory Boards of the Foreign Relations Committee of N. A. D. Faculties.

ANNUAL MEETING OF THE KANSAS STATE DENTAL ASSOCIATION.

The twenty-eighth annual meeting of the Kansas State Dental Association was held in Topeka, Kan., May 2, 3 and 4, 1899.

Dr. J. Freeman Burket gave the annual address as retiring president on Tuesday morning, May 2. Clinics were given that afternoon, and in the evening Dr. A. H. Thompson, of Topeka, gave a lecture on "Comparative Dental Anatomy," illustrated with stereopticon views, which was discussed by Prof. S. W. Williston, of the Kansas University. This was followed by Dr. J. W. O'Bryon, of Lawrence, Kan., with a paper on "Oxyphosphates."

Wednesday morning, May 3, papers were read by Dr. L. P. Haskell, of Chicago, upon "Prosthetic Dentistry," and Dr. F. O. Hetrick, of Ottawa, Kas., upon "Ideals." In the afternoon Dr. Haskell constructed a continuous gum porcelain plate; Dr. O. H. Simpson, of Dodge City, Kan., demonstrated lengthening the contour on an incisor with gold plate, and other clinics. In the evening Dr. J. D. Patterson, of Kansas City, gave a paper upon "Diseases of the Antrum," Dr. S. E. Johnson, of Leavenworth, Kan., upon "Pyorrhœa," and others.

Thursday morning, May 3, Dr. A. H. Peck, of Chicago, gave a paper upon "The Etiology of Neuralgia, or Nerve Cries," Dr. C. L. Hungerford, of Kansas City, Mo., upon the "Necessity for Pulp Destruction," Dr. L. D. Hodge, of Arkansas City, Kan., upon "The Preservation of the Sixth Year Molars," and others. In the afternoon clinics were given by Dr. W. E. Griswold, of Denver, demonstrating a method of replacing broken facings in crown and bridge work and also a method of placing gold fillings in artificial teeth, and other clinics.

The closing session was also held at which the following officers were elected for the ensuing year: President, Dr. C. C. Allen, of Kansas City; First Vice President, Dr. R. Mathews, of Wichita, Kan.; Second Vice President, Dr. W. A McCarter, of Topeka, Kan.; Secretary, Dr. Edward Bumgardner, of Lawrence, Kan.; Treasurer, Dr. S. J. Renz, Leavenworth, Kan. The next meeting will likely be held at Kansas City, but the date and final arrangements were left to the executive committee.

G.

AMERICAN MEDICAL ASSOCIATION ANNOUNCEMENT.

The Section of Stomatology of the American Medical Association will hold its next meeting at Columbus, Ohio, June 6-9. All dentists are cordially invited. To become a member of this section it is necessary for those holding the D. D. S.

degree to bring credentials from their State dental society, showing that they are members in good standing and entitled to represent them in the association. The members of the Section of Stomatology are in every way recognized just the same as members of all other sections. Upon payment of $5 annual dues the journal of the association is mailed without further expense for the ensuing year. Special trains will leave Chicago carrying delegates at reasonable rates. For further information in regard to this and other matters address Dr. Eugene S. Talbot, Secretary, Columbus Memorial Building, Chicago, Ill. The following is the complete programme to date: "Chairman's Address," Dr. G. V. I. Brown, Milwaukee. "The Human Face and Jaws as a Danger Signal of Systemic Defect or Disorder," Dr. J. G. Kiernan, Chicago. "Cocaine and Eucaine, Their Relative Toxicity," Dr. A. H. Peck, Chicago. "Epithelial Structures in the Peridental Membrane," Dr. Frederick B. Noyes, Chicago. "Infectious Ulcerative Stomatitis," Dr. John S. Marshall, Chicago. "Oral Surgical Operation" (with illustrations showing remarkable results), Dr. G. V. I. Brown, Milwaukee. "Some Points on the Etiology, Pathology and Treatment of Persistent Pyorrhœa Alveolaris," Dr. G. T. Carpenter, Chicago. "Interstitial Gingivitis, (so-called Pyorrhœa Alveolaris) Giving the Result of Original Work, with large Photographic Illustrations Showing the Progress of the Disease from Beginning to the Exfoliation of the Teeth," Dr. Eugene S. Talbot, Chicago. "Syphilitic Infection from Dental Instruments," with cases, Dr. W. L. Baum, Chicago. "Professional Education and Ethics," Dr. A. E. Baldwin, Chicago. "Neuralgias Due to Progressive Lesions of the Periosteum," Dr. M. H. Fletcher, Cincinnati. "The Treatment and Positive Cure of Pyorrhœa Alveolaris in Connection with Restoration of Normal Articulation," Dr. W. G. A. Bonwill, Philadelphia, Pa. "The Therapeutics of Inflammation," Dr. W. B. Hill, Milwaukee. Dr. Bonwill will hold a clinic independent of the meetings of the Section on Stomatology to those who wish to meet him.

EUGENE S. TALBOT, *Secretary.*
G. V. I. BROWN, *Chairman.*

Extract from the address of I. P. Wilson, M. D., D. D. S., to the students of the Keokuk Dental College:

He said in substance that there are two events in life to which the memory always turns, when the sun seems to shine more brightly and all the world seems better and kinder. It is hardly necessary to say that these two eventful occasions are the wedding and the commencement day. The word wife means to a young man love and home and companionship. The other occasion is the one of which I am to speak to-night.

Gentlemen, I congratulate you upon the honor you have attained to night. You stand upon the threshold of a professional career. Your profession is a honorable one that walks hand in hand with its elder sister science, the medical profession. It is said that your profession is full and crowded. It is not and never can be too full of high minded, noble, philanthropic men. Your adherence to the ethics of your profession will do you honor. You have an important service to render to mankind. You are to teach mankind that the germs of disease may be found not alone in sewers and streets, but even at the very threshold of respiration.

During the last half century dentistry has grown to be one of the important sciences. Dental students and medical students pursue their studies side by side. Thirty-five years ago there were but three dental graduates in the State. Now there are over 700 dentists in the State, and of these over 500 have the D. D S. degree.

Dr. Wilson continued with the recital of a number of amusing reminiscences of his dental studies and the methods in vogue at that time, thirty-five years ago. He told of his early experiences in practice. He said that his early studies were under a preceptor, and after five years' practice with only this preparation, he felt so humiliated by his experiences that he closed his office and entered upon a course of dental study in a college. The advantages thus gained served to make him more able to overcome the obstacles with which he was confronted. The advantages of clinical demonstration are to-day greater than ever before. The hand must become skilled as well as the mind. A man may be theoretically perfect, but he will not be unless he has practical experience and work such as you have had under the personal instruction of your instructor.

Remember that success is not so much a matter of luck as of pluck. Do not depend upon anything outside of yourself. We are not concerned so much now with the past as with the future. The next decade will decide whether you are upon a rising grade to success or a descending grade to failure. If you have not attained a fair measure of success by then, you may scarcely hope to rise above mediocrity. We expect better things of you. We know that you are manly and upright and aspiring young men. Be self-reliant. Be hopeful. A man never rises above the value he places upon himself. I would rather he should be egotistical and conceited than that he should place too low a value upon himself.

He closed with some valuable advice to the graduates. He recommended that they connect themselves with professional societies and the keeping in touch with all that is best in their profession. He counseled them to good habits and pointed out in forcible language the value of character and the use of a good name in all the relations of life. His conclusion was a happily phrased Godspeed to the young graduates of the dental department.

THE AMERICAN DENTAL SOCIETY OF EUROPE.

Upon motion, the following report of the committee appointed by the American Dental Society of Europe in London, August, 1898, was carried unanimously :

WHEREAS, A special executive session of the American Dental Society of Europe has been called at Brussels, April 1, 1899, for the purpose of considering what further action shall be taken toward improving the standing of the graduates from American dental colleges practicing in Europe, and to receive and act upon the report of the committee appointed in London at the last annual meeting,

WHEREAS, A majority of said committee and a large number of the active members of the society being present from all parts of Europe, thereby showing their great interest in the subject under consideration,

Resolved, That the American Dental Society of Europe views with pleasure and approval the action of the National Association of Dental Faculties, U. S. A., in appointing a Foreign Relations Committee, and hopes that this committee will be indefinitely continued, and empowered to take such action as shall appear to its members to be for the best interests of the profession.

Resolved, That the society expresses its thanks to the National Association of Dental Faculties, for its resolution and action in accepting the report of its Foreign Relations Committee, and continuing it at Omaha, August, 1898, and creating advisory boards in all European countries, with the view that the certificates of foreign students proposing to enter American dental colleges be submitted to the advisory boards of the repective countries of which they are citizens or residents.

Resolved, That it is the opinion of this society, that foreign students should possess such a knowledge of the English language as will enable them to thoroughly comprehend the lectures and teachings which they will be called upon to pass examinations in, and that no foreign student should be allowed to pass any examination through the medium of an interpreter.

Resolved, That the American Dental Society of Europe heartily approves of the wisdom of requiring a preliminary examination of students from European countries, or would suggest as preferable that it be required of each foreign student that he present official certificates of having passed the preliminary requirements for matriculation as a dental student in his own country, and that these certificates be endorsed by the advisory board of said country, and that they also be subject to the rules of the National Association of Dental Faculties.

Resolved, That this society approves of the resolution of the Foreign Relations Committee of the National Association of Dental Faculties, to appoint advisory boards consisting of not more than three members, and it is hoped, for the accomplishment of the best results, that the number of members on each board be raised to three at the earliest practical moment, and this society is unanimously and strongly of the opinion that three are necessary to constitute an influential board of this nature; and that, where practicable, at least one member should be a native of the country.

Resolved, That the American Dental Society of Europe tender a sincere vote of thanks to the National Association of Dental Faculties, and to the Foreign Relations Committee, and especially to their energetic chairman, Dr. W. C. Barrett, for the active and hearty manner in which they have met the appeals of their confrères in Europe, who for so long have urged the importance of the consideration this subject is now receiving at their hands.

Resolved, That a committee upon dental education be a permanent committee of the society, and that said committee consist of all the members of the society who are members of the advisory board of the Foreign Relations Committee of the National Association of Dental Faculties.

(Signed) L. C. BRYAN,
W. E. ROYCE,
W. MITCHELL.

It was further moved and carried, That the report of the committee be sent to the various dental journals for publication at the earliest possible date.

AMENDED DENTAL LAW FOR ILLINOIS.

AN ACT to insure the better education of practitioners of dental surgery, and to regulate the practice of dentistry in the State of Illinois. Approved May 30, 1881. As amended and approved April 15, 1899.

WHO MAY PRACTICE—DIPLOMA.—Section 1. *Be it enacted by the people of the State of Illinois, represented in the General Assembly*, That it shall be unlawful fo

any person, who is not at the time of the passage of this act engaged in the practice of dentistry in this State, to commence such practice unless such person shall have received a diploma from the faculty of some reputable dental college, duly authorized by this State, or of some other of the United States, or by the laws of some foreign country, in which college or colleges there was at the time of the issue of such diploma, annually delivered a full course of lectures and instructions in dental surgery; provided, that any person removing into this State, who shall have been for a period of ten years prior to such removal a practicing dentist; and, provided, also, any person holding the diploma of doctor of medicine from any reputable medical college of medicine, shall be entitled to practice dentistry in this State, upon obtaining a license for that purpose as hereinafter provided; and nothing in this act shall be construed to prohibit any physician or surgeon from extracting teeth.

Board of examiners created—Duty—Appointment.—Sec. 2. A board of examiners, to consist of five practicing dentists, is hereby created, whose duty it shall be to carry out the purposes and enforce the provisions of this act. The members of said board shall be appointed by the Governor. The term for which said board shall hold their offices shall be five years, except the members of this board first to be appointed under this act shall hold their offices for the term of one, two, three, four and five years, respectively, and until their successors shall be duly appointed. In case of a vacancy occurring in said board, such vacancy shall be filled by the Governor.

Organization of the board.—Sec. 3. Said board shall choose one of its members president and one the secretary thereof, and it shall meet at least once in each year, and as much oftener and at such times and places as it may deem necessary. A majority of said board shall at all times constitute a quorum, and the proceedings thereof shall, at all reasonable times, be open to public inspection.

Who may practice—Registration.—Sec. 4. It shall be the duty of every person who is engaged in the practice of dentistry in this State, within six months of the date of the passage of this act, to cause his or her name and residence or place of business to be registered on the books of said board of examiners, who shall keep a book for that purpose; and every person who shall so register with said board as a practitioner of dentistry, may continue to practice the same as such, without incurring any of the liabilities or the penalties provided in this act.

Persons not registered—Must be examined.—Sec. 5. No person whose name is not registered on the books of said board as a regular practitioner of dentistry, within the time prescribed in the preceding section, shall be permitted to practice dentistry in this State until such person shall have been duly examined by said board and regularly licensed in accordance with the provisions of this act.

Examination—License.—Sec. 6. Any and all persons who shall so desire, may appear before said board at any of its regular meetings and be examined with reference to their knowledge and skill in dental surgery, and, if the examination of any such person or persons shall prove satisfactory to said board, the board of examiners shall issue to such persons as they shall find from such examinations to possess the requisite qualifications, a license to practice dentistry in accordance with the provisions of this act. But said board shall, at all times, issue a license to any regular graduate of any reputable dental college without examination, upon

the payment of such graduate, to the said board, of a fee of five dollars. All licenses issued by said board shall be signed by the members thereof, and be attested by its president and secretary; and such license shall be prima facie evidence of the right of the holder to practice dentistry in the State of Illinois.

TEMPORARY LICENSE.—Sec. 7. Any member of said board may issue a temporary license to any applicant, upon the presentation by such applicant of the evidence of the necessary qualifications to practice dentistry, and such temporary license shall remain in force until the next regular meeting of said board occurring after date of such temporary license, and no longer.

VIOLATION—PENALTY.—Sec. 8. Any person who shall violate any of the provisions of this act shall be liable to prosecution before any court of competent jurisdiction, in the name of the people of the State of Illinois, and upon conviction may be fined in any sum not less than $25, nor more than $100, for each and every offense. All fines and penalties recovered under this act shall be paid to the Illinois State Board of Dental Examiners for their use.

FEES—PER DIEM—EXPENSES—REPORTS.—Sec. 9. In order to provide the means for carrying out and maintaining the provisions of this act, the said board of examiners may charge each person applying to, or appearing before them for examination for licence to practice dentistry, a fee of ten dollars, and out of the funds coming into the possession of the board from the fees so charged, the members of said board may receive as compensation the sum of five dollars for each day actually engaged in the duties of their office, and all legitimate and necessary expenses incurred in attending the meetings of the said board. Said expenses shall be paid from the fees and penalties received by the board, under the provisions of this act. All moneys received in excess of said per diem allowance and other expenses above provided for, shall be held by the secretary of said board as a special fund for meeting the expenses of said board, by giving such bond as the board shall, from time to time, direct. And said board shall make an annual report of its proceedings to the Governor, by the fifteenth of December of each year, together with an account of all moneys received and disbursed by them pursuant to this act.

LICENSES TO BE FILED WITH COUNTY CLERK—FEES—PENALTY.—Sec. 10. Any person who shall be licensed by said board to practice dentistry, shall cause his or her license to be registered with the county clerk in the county in which such person may reside to engage in the practice of dentistry, within six months from its date and the date of registering shall be endorsed thereon. The county clerks of the several counties in this State shall charge a fee of twenty-five cents for registering such license. Any person holding such license who removes to another county or desires to practice in more than one county, shall register his or her license as above directed in each of such county or counties. The holder of a license shall not practice in a county until his license is registered in such county. Any failure neglect or refusal to register the license in some one county in this State for a period of six months from the date of issue, shall work a forfeiture of the license and no license, when once forfeited, shall be reissued, except upon the payment to the State Board of Dental Examiners of a penalty of twenty-five dollars for such neglect, failure or refusal.

ILLINOIS STATE DENTAL SOCIETY.

Following are the officers of the Illinois State Dental Society for the ensuing year: President, Dr. R. N. Lawrence, Lincoln; Vice President, Dr. J. Campbell, Bloomington; Secretary, Dr. A. H. Peck, Chicago; Treasurer, Dr. C. N. Johnson, Chicago; Member Executive Committee, Dr. E. H. Allen, Freeport; Committee Dental Science and Literature, Dr. A. W. Harlan, Chicago; Committee Dental Art and Invention, Dr. H. J. Goslee, Chicago; Member Executive Board, Dr. C. C. Corbett, Edwardsville; Supervisor of Clinics, Dr. J. E. Hinkins, Chicago; Committee on Ethics, Dr. C. B. Powell, Jacksonville, Dr. F. H. McIntosh, Bloomington, Dr. M. R. Harned, Rockford; Librarian, Dr. H. A. Potts, Bloomington; Local Committee of Arrangements, Chairman, Dr. G. H. Henderson, Springfield; Assistants, Dr. O. L. Frazee, Dr. E. H. Hazell.

The next meeting will be held at Springfield.

POISONING BY NAPHTHALIN.

Naphthalin is so much used (under fancy names) in protecting woolen fabrics against the incursion of moths that it is well to remember its toxic properties. Dr. J. L. James reports in the *National Druggist*, anent a note by Zangerie, on several cases in which symptoms resembling those of severe alcoholic intoxication followed the eating of some "moth balls" by children, that he had himself known a similar result from simply inhaling the odor. A young man slept on a bed on which was a pair of blankets that during the summer had become permeated with naphthalin. He awoke in the morning stupid and with headache and malaise. This occurred for four or five days successively; the naphthalin was suspected, and on removing the blankets the symptoms ceased. The author says that as other members of the family used blankets which had been similarly treated without experiencing unpleasant symptoms the effects noted in the case mentioned must be attributed to idiosyncrasy.

OPERATIONS UNDER COCAINE.

In his surgical clinics before the students of the Medical Department of Tulane University, New Orleans, La., Dr. Rudolph Matas, occupying the chair of surgery in that institution, performed extensive operations under cocaine analgesia, using Corning's method. Recently a modified Pirogoff amputation was done, the case being one of a frost bitten Chopart stump. The great sciatic was exposed a little above the popliteal space and injected directly with cocaine solution. Injections were also made in the course of the internal saphenous nerve in the lower third of the leg. The solutions varied in strength from two-tenths per cent (Schleich formula) to one per cent. The operation was absolutely without pain. Earlier in the session the ring and little fingers of one hand were removed for epithelioma, by the same method. The median, ulnar and musculo-spinal nerves were exposed in the vicinity of the elbow joint and injected with cocaine solution. The same solutions were employed as in the foot case; in both cases a constrictor was applied above the cocainized area; the result was equally good. These and other cases are to be reported in full in the future.

LIQUID AIR AS A CAUSTIC.

According to the Tri-State *Medical Journal and Practitioner*, the use of liquid air as a cautery is already spoken of favorably. It having a temperature of 312° F. below zero, its action is, to all intents and purposes, the same as that of the most powerful actual cautery. It does not really burn, but utterly kills the tissues, leaving a blister not unlike a burn. Hence it has been suggested for cauterization in surgical practice. It is not only a good deal cheaper than the ordinary cautery, but it is much more efficient and its action can be absolutely controlled. A well-known surgeon has already performed a difficult operation on a cancer case with liquid air, and he has reported the case as cured.

MASON FACINGS.

Mr. H. C. Curtis, Secretary and Treasurer of the Mason Detachable Tooth Crown Co., is authority for the statement that a contract has been made by which Messrs. H. D. Justi & Son, of Philadelphia, will in future make the porcelain facings used in the Mason system.

From the time the Mason facings were introduced we have been interested in them. We have not been interested in a financial sense because we are not so fortunate as to hold any of the company's stock, but because we believed the Mason system was all right.

We were one of the first supply houses to put in a stock of the facings, and our extensive advertising of them and our belief in them has had a very natural result. The result is a constantly increasing demand.

But the Mason facings we have been supplying have had a fault.

Was any new thing made that did not have a fault ?

The strip of platinum attached to the back of the facing has not been what the little boy called the bee.

It has not been a "stick tight."

Mr. Curtis demonstrates a radical change in this direction. He claims the body of the Justi tooth is better for his purposes than the body of any tooth made by anybody else.

He is absolutely certain about this.

He assures us that it is an utter impossibility to tear, twist or pull the platinum from one of the new facings without crushing the tooth.

If that is so, the Mason facings are an assured and positive success.

If it is not so, we are authorized by the Mason Company to replace, without charge, any of the new facings that have the fault of the old ones.

Mr. Curtis has the courage of his convictions.

Anyway, we have placed an order for several thousand dollars' worth of the new facings, which will probably be on sale by the time the first number of *Dental Topics* reaches its readers.—*Dental Topics*, published by Lee S. Smith & Son, Pittsburgh, Pa.

THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

REPORT OF TWO CASES OF CYSTS OF THE JAW.*

BY THOS. I. GILMER, M. D., D. D. S., CHICAGO, ILL.

Cysts of the jaw are sufficiently rare to justify me in presenting two cases which I have recently had in my practice, both of which were demonstrated by skiagraphs made for me by Mr. Fuchs, of the Schiller Building, this city.

Case No. 1 was referred to my clinic at the Northwestern University Dental School, through the courtesy of Dr. Frankel, of Chicago. The patient is a man thirty-one years of age, a cabinet maker. Four or five years previous to his first visit to my clinic he reports that he had a swelling in the region of the third molar, which it was supposed was caused by its being partially erupted. This was extracted and afforded temporary relief. In less than a year he had a recurrence of the swelling which would periodically return and subside, pain always accompanying the swelling. A few months ago he applied to Dr. Frankel, who found the first molar quite loose, which he extracted, with temporary benefit. When I first saw the case there was thickening of the jaw from the second bicuspid to the angle, with a slight redness of the overlying soft tissues. I made an incision into the thickened portion of the jaw for exploration and found a small quantity of a straw colored fluid, the flow of which was followed by blood. On probing, I discovered a cystic condition of the jaw extending back on either side of the second molar toward the angle. The second molar was quite loose. This was extracted and was followed by a profuse arterial hæmorrhage. The appearances indicated a dentigerous cyst, or a sarcoma, or both. I had two skiagraphs of the jaw made. In one the film was exposed in the mouth, the light being applied below the jaw; the other exposing the jaw from the side.

Neither of these pictures gave evidence of unerupted teeth in

*Read before the Odontographic Society of Chicago.

the posterior portion of the jaw, but clearly outlined the cyst. Fig. 1 C. The picture made by exposing the film in the mouth showed plainly buried deeply in the jaw below the deciduous cuspid, which had not been shed, the permanent cuspid. It showed also a small canal on the lingual side of the bicuspid, connecting the cuspid

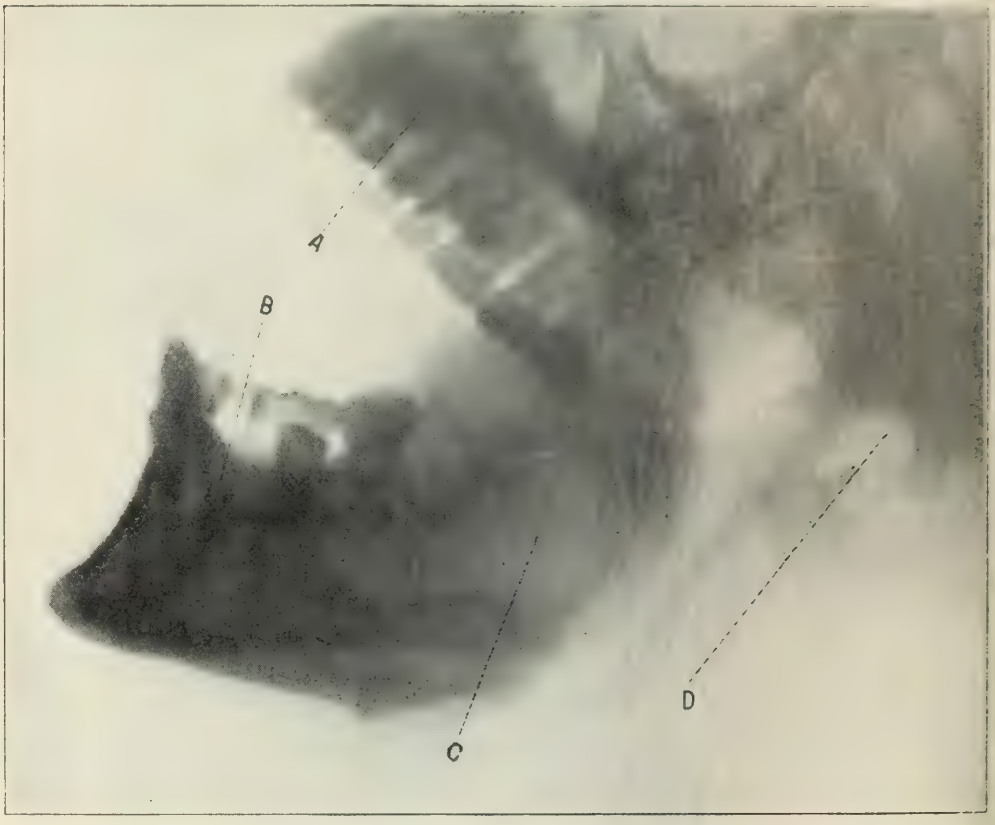


FIG. 1.

Skiagraph from Case No. 1, after the extraction of the temporary cuspid and first bicuspid. A, unerupted superior cuspid. B, impacted or unerupted lower cuspid. Picture lost shows canal connecting this tooth with main cyst, C. D, glenoid fossa, showing the condyle resting on the articulating eminence—a condition described in the text-books as an incomplete dislocation. In this case the patient was not aware of or in the least inconvenienced by the condition.

with the main cyst. I regret my inability to show this picture to you, though there are those present who saw it. This picture, the most important one of several exhibited at a clinic given by me at the thirty-fifth anniversary meeting of the Chicago Dental Society I regret to say was lost. That I cannot present it to you this evening to back up my statements, and to show you more fully the value of the X ray in this work and also that I might publish it with this report, is a severe disappointment to me.

I extracted the first bicuspid and temporary cuspid above the buried tooth and cut away the bone underlying and found the tooth, and also found that I could pass a probe from it to the cyst through the canal, as shown by the skiagraph. I cut away with the engine and bur a considerable portion of the bone about the cuspid and attempted its removal with forceps, but it was so firmly imbedded in the body of the bone that I dared not apply sufficient force for its dislodgment. I prevented granulations covering the exposed tooth by keeping the opening packed with gauze.

Upon opening into the bone in the posterior portion of the jaw I found a multilocular cyst, with here and there necrosed bone. I cut away the bony partitions and frequently irrigated the parts with an antiseptic solution, packing the opening with iodoform gauze. This was continued for a number of weeks. At present the case is very much improved, though the opening in the bone made by the destruction of the cell walls and the removal of necrosed bone has not fully filled up. It is, however, slowly filling.

There may be a doubt entertained as to whether the cyst in the posterior part of the jaw was caused by the buried cuspid. It was certainly a cyst, and of the multilocular variety. I am of the opinion that it had its origin in the capsule of the buried cuspid tooth, as there was positive evidence of direct communication on the lingual surface of the jaw between the cuspid and the cystic condition in the posterior portion of the jaw.

Case No. 2 was referred to me by Dr. Black, and was operated upon by me at St. Luke's Hospital. The following is a report of the case and the operation by Dr. Manning, interne at the hospital, with additions and amplifications by myself:

Henry F., of German parentage, aged fourteen, was admitted to the wards of St. Luke's Hospital, December, 1898. For six months before entering he had suffered from what he calls "a swelling on his upper jaw," extending from the second bicuspid to the tuberosity. This gradually increased in size until two months before entering the hospital an opening occurred, and through it was discharged several hard, irregular bodies, one of which resembled a normal tooth. The patient is of the opinion that about four of these bodies were either discharged or removed, one requiring the assistance of a dentist, the others being removed by the aid of the thumb and fingers. He has experienced some pain in the jaw occasionally, usually preceding the attempt at a discharge of the bodies. This pain, he thinks, was very similar to

toothache from a badly decayed tooth, which causes "the jaw to swell." No history of severe illness, aside from the usual childhood diseases, is obtainable. History of injury does not obtain.

The family history shows nothing that might be interpreted as hereditary in his case. Both father and mother are living, and no irregularities in the teeth as to form or development occurred. The same may be said of the brother and sister older than he.

On physical examination of the oral cavity and face, the first thing which attracts notice is the slight prominence of superior maxilla beneath the left eye. The eye itself is not encroached upon by swelling. Pressure elicits no pain. In the roof of the mouth but slight irregularity occurs, only a trifle of enlargement of the alveolar process opposite of the second bicuspid and first and second molars, but on the buccal side of the above mentioned teeth there is a distention of the outer wall of the alveolar process at least one-half an inch. Posteria and buccally to the second molar there is a small opening in the gum through which the bodies above referred to were discharged. Through this opening, hard, smooth bodies may be distinctly felt with the probe. To the palpating finger is imparted the sensation of hard and immovable bodies. The size of the growth not possible to entirely outline by palpation, on account of its situation. The erupted normal teeth in the jaw show no special irregularity in position or development, but each is more or less loosened by partial absorption of the process caused by pressure of the growth.

Operation: Patient was chloroformed by Dr. Curry, small amount required, and was well tolerated throughout the entire operation. The second bicuspid and the two molars overlying the cyst were extracted in order to uncover the tumor. The gum was dissected up from the buccal aspect of the tumor and the overlying process removed. With the aid of a dull curette large numbers of anomalous teeth varying in size were removed. Fig. 2 The size of the cyst was found to correspond to that of the antrum of Highmore, entirely obliterating that sinus; the prominence of the face being due to the pressure forward and laterally upon the outer wall of the antrum. The entire number of malformed teeth removed by curette was seventy-eight. The cyst wall was thoroughly curetted away, the cavity irrigated with boric solution and packed with iodoform gauze. Two silk ligatures were placed through the gum tissue for the purpose of helping to retain the gauze in place. This might be designated in contradistinction to

cysts containing one tooth, a multiple dentigerous cyst. This cyst contained far more teeth than any other cyst of the jaw of which I have been able to find a report. Tomes reports one case in which there were twenty-six dwarfed teeth. Salter one in which



FIG. 2.

Photograph, by Dr. F. B. Noyes, of bodies removed from Case No. 2 (Fig. 2). Most of the smaller bodies not well shown in the cut are spherical in form.

there were twenty-eight more or less dwarfed. Dr. Swain reported a very interesting case to the American Dental Association in 1875, in which there were sixteen dwarfed cuspid teeth removed from one cyst. These were perfectly formed teeth but diminutive in size. He presented photo-micrographs at that early day of the histological appearance of the teeth. The pictures are superior to many made now.

In case No 2, I employed, as well as in case No 1, the skiagraph, as an aid to diagnosis, though I had no doubt as to the true condition, from the history and physical appearance, but employed it to familiarize myself with the abnormal conditions, as shown by

the X ray in such cases, as an aid in differential diagnoses, when the indications are less pronounced. Fig. 3.

Exsections of jaws have been made, the physical appearance and history in the case indicating malignant affections, when too late it has been discovered that the disease was the result of a buried tooth, which had caused a cystic condition of the jaw, and that a much less heroic operation would have been sufficient, which would have left the jaw intact. In all cases where there is the least doubt it is best to employ the X ray and determine positively if there be present a buried tooth, which may be the cause.

It is not difficult to suppose that the capsule enclosing a buried tooth, whether of the normal or supernumerary set, if from some cause it cannot be erupted, may from irritation be transformed into a cyst wall and the conditions observed which are found in a dentigerous cyst, but there are other problems in connection with dentigerous cysts which are less easily accounted for.

The development of supernumerary teeth in the jaws appears less irrational than the development of teeth in other parts of the body, in the ovaries for instance. However, we have no definite knowledge of their exact source, neither do we know why we have in some instances perfectly formed teeth, usually of the cuspid type, and in others nests of malformed teeth composed almost wholly of dentine. Kollman and Magitot concluded that supernumerary teeth are developed from the remains of the epithelial cord after it has been separated from the follicle. They were of the opinion that there was in some instances sufficient fecundating influence remaining in these portions of the cord, to cause the embryonical tissue to attempt tooth formation. I feel quite inclined to believe that this theory is correct if applied to these nests of malformed teeth, but it does not seem to me that it accounts for the perfectly formed supernumerary teeth.

Dr. Black has found, in some instances, that the buds which form the permanent anterior teeth are not always given off from offshoots from the cords of the temporary teeth, which is the rule, but that occasionally they are given off directly from the epithelial lamina. This being true, may not the more perfectly formed supernumerary teeth be a result of an additional or double budding direct from the lamina, or an extra bud from the cord which is to form the permanent tooth, and the malformed teeth a result of an effort at further stimulation of the indifferent tissue by the several parts of the partially atrophied cord which has lost its fecundating

influence in too great a degree to form fully developed teeth, but retains sufficient vigor to cause the development of malformed

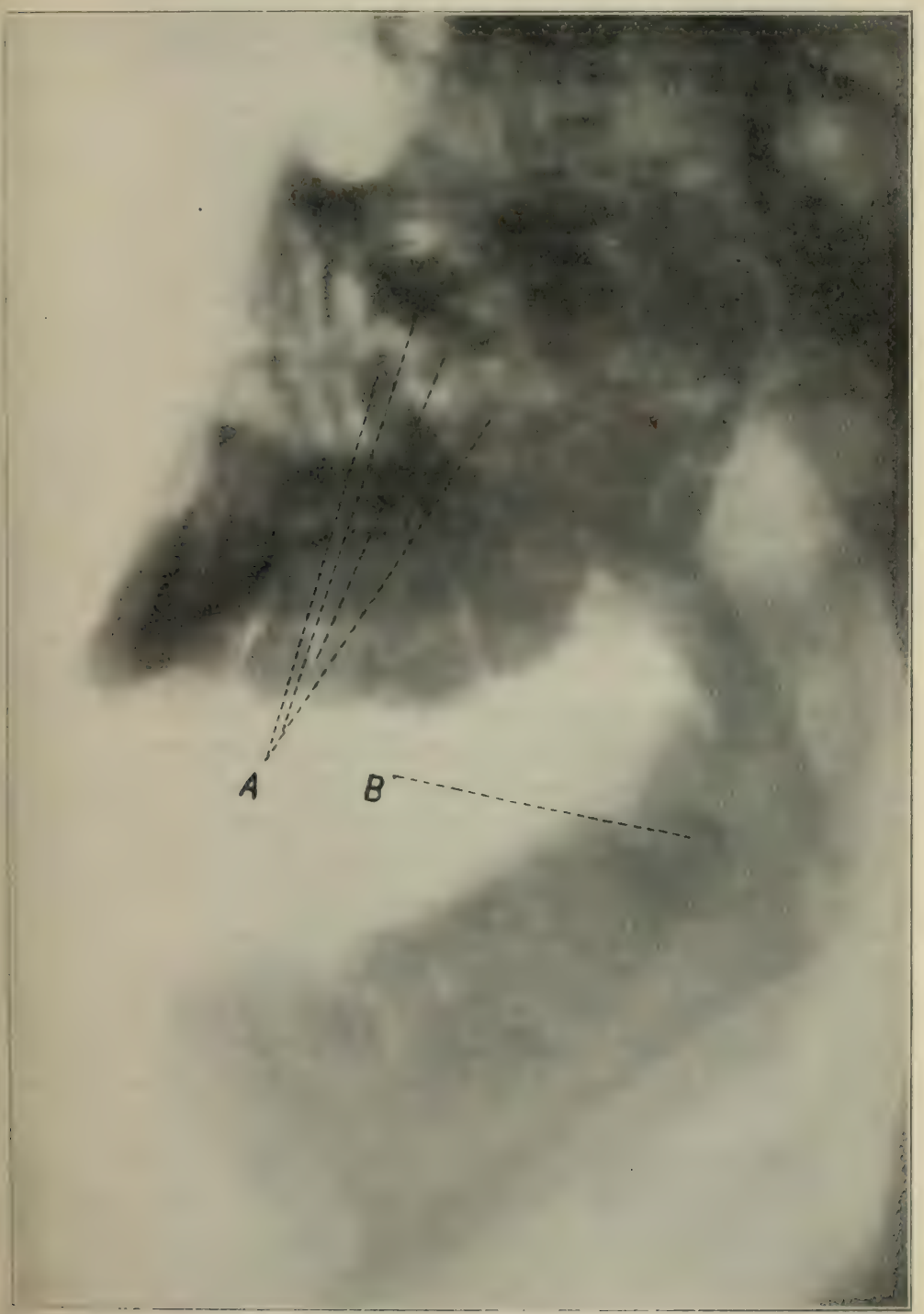


FIG. 3.

Skiagraph of Case No. 2. A, bodies filling the antrum of Highmore. B, unerupted third molar.

teeth? We find that these teeth or bodies are principally composed of dentine, with perhaps but a trace only of enamel, which must be present, as we cannot presuppose that the enamel organ, while capable of stimulating the formation of dentine is not capable of a deposit of enamel. Indeed, we must always conclude, even if enamel is not visible macroscopically, that it must exist, however small in quantity, in connection with some part of the dentine formation, or if not found, we must conclude that it has been accidentally removed.

President's Address.*

By C. P. Pruyn, M. D., D. D. S., Chicago, Ill.

Anniversaries are the milestones of life. The universal custom of observing them serves the practical purpose of gauging the distance traveled—either up or down—from the starting point. To-day the Illinois State Dental Society touches its thirty-fifth milepost of years, so to speak, and we pause here a moment to glance back on the long line over which we have come and to peer forward with hopeful eyes into that widening domain over which we are destined to pass.

The spirit of coöperation which, with steadily increasing power pervades this latter end of the nineteenth century, in no one way has shown more powerful and far reaching results than in the profession of dentistry in this country. In this day of fraternal conferences the mind can hardly credit the isolated and selfish spirit which obtained among dentists forty years ago. Each man's workroom was barred against his brother. Prejudices and small jealousies seemed to array one against the other. Lips were sealed lest some important method of practice might be revealed, and the darkness of selfishness prevailed throughout the country. The organization of dental societies has, to my mind, revolutionized the condition of the general profession. Among the pioneers in this work is this society in the State of Illinois, and the history of its attainments during its long life is an unerring gauge of the development of the profession at large for the last one-third of a century. When this society came into existence dentistry was just beginning to take its place as an independent profession. Professional jealousy and secretiveness was even greater here in the West than in the eastern centers, where years had given higher

*Read before the Illinois State Dental Society.

tone of professional culture. Under these conditions the task of forming a State dental society was a harder one than any of us who live under present day conditions can truly realize. But those pioneer years of struggle have led to results of which we may well feel proud, for to-day we have a society which ranks with any in the world for practical work, and one whose published transactions are eagerly sought wherever dentistry has created an interest. Chicago may well be proud of the fact that it was here that our honored society was founded, and that out of the many local associations which have sprung from this parent stem, five of them are in this city, the Odontographic the largest of them all.

The year which we round out to-day has shown very little advancement in the art of filling teeth. And it may be said that dentistry was only one of the many activities which were stunned into inaction during the last twelve months by the intrusion of that dreadful monster, war. The art of healing is an art of peace, and it stands still and languishes when war's alarms are sounded and when man is at strife with his fellow man. The greatest advance during the year seems to have been made in prosthetic and in crown and bridge work, and in therapeutics. The steadily increasing attention given to bridge work incites me to make right here a strong plea for the more conservative treatment of the natural tooth crown. The improved methods of devitalization of the pulp and the filling of the pulp canal, and the comparative ease of crowning, have doubtless been the cause of the destruction of thousands of natural tooth crowns that might better have been filled and saved for many years of usefulness.

A better knowledge of alloys and the combinations of different metals for that purpose have, of late, attracted considerable attention. These helpful improvements are, as we know, the direct outcome of the researches of our honored confrère, Dr. G. V. Black. The makers of alloys have taken advantage of the results of these investigations and as a consequence have given us a much better alloy than we have heretofore used.

We all must acknowledge with gratitude the improved methods of teaching in nearly all of our dental schools. The profession at large is under a deep debt of gratitude to our teachers of technique for the wonderful advance they have made in their special field of labor. The enthusiasm with which they present their cause, coupled with their healthy discontent with present attainments augurs well for the future.

We are to be congratulated that through the strenuous efforts of our State Board of Dental Examiners, some amendments have been made to our laws restricting the practice to competent persons as follows: The license fee has been raised from $1 to $5, and the examination fee from $2 to $10. The fees thus obtained go to the State board to help defray the necessary expenses of the same.

During the last few months, there has appeared a speck on the dental horizon which some of us hope will be largly increased in size when next we convene. The idea is to have dentists under the auspices of the dental societies go into the grammar department of the public schools, examine the teeth of the children and give them instruction in oral hygiene. The salutary effects of this plan are far reaching. The removal of stigmata that are incident to the irregularities of the teeth; the preservation of the first molar; the impression upon the mind of the child while in its plastic period of the necessity of caring for its teeth; and the collection of data incident to such examinations are some of the benefits to be expected from this movement. This is a purely unselfish movement on the part of the dentists, and those who are to receive its direct benefits are of the next generation, and their children. But if a selfish side must be recognized, it is well to point out the fact that the schools would furnish the very kind of clinical work which is needed by our dental colleges. It is interesting to note the fact that since the Chicago committee has started this work, there have come inquiries from all parts of the world as to its methods so that similar work might be started in those countries from which came the questions. Already in many countries oculists have established this close connection with the people through the schools—and surely we, of all people, will be the last to allow that the teeth are less important than the eye in the tender period of youth. I appeal to you all, then, to give thought to this idea, and when it comes before you in practical shape for action, let me ask you to give it your support. In it we build for the future, and for it posterity will owe us a debt of gratitude..

One of the events of the last year which causes in us a keen regret is the defeat of the Rogers' educational bill. This bill seems to have included everything which was good and sufficient in the way of legislation for all literary and degree conferring

colleges. Religious misinterpretation and spurious colleges may be charged with its downfall. The fairness and the liberality of the measure was attested by the frequent conferences held between its proposers and certain opposing bodies. No amount of explanation could show that no religious discriminations were intended, however, and the bill, which might have worked so much good to our colleges, was killed. There will probably be presented to the next legislature a measure which will be similar to the Rogers' bill in its most important features, and we must profit by the experience of this winter and avoid those mistakes which were the cause of misunderstanding and defeat.

It is the earnest suggestion of your president that each and every member of this association throughout the State use to his utmost what influence he can bring to bear on the legislature from his district to secure support for this measure, so that when it is again proposed its success may be insured, and the dignity and character of our profession may receive an additional safeguard and strength.

This bill would effect one of the many changes which to my mind's eye the twentieth century holds for the profession of dentistry. The extension of the college course to four years and an increase in preliminary examinations are also desirable changes which the near future will hold. There will be improvements in both the art and science of dentistry and possibly the M. D. degree may be a requirement. All these things the eye of faith beholds, for judging by its past use and growth, the future of dentistry in America is full of unlimited promise and hope of progress.

The International Dental Congress to be held in Paris during the exposition of 1900 is an event which promises to give a strong impetus to the dental profession. America will, doubtless, be largely represented at this conference and our State of Illinois must not be among the missing. I strongly recommend that delegates with proper credentials be sent from this society, and would suggest that such appointments be made at this meeting.

And now there only remains for me to extend to you all a cordial welcome from the dentists of Chicago. This is the first time that our conference has been held in this city for twenty-seven years.

Chicago dentists are proud to have you here and extend to you the cordial hospitality of their offices and homes. It is to be

hoped that you will visit their offices as much as possible and witness their methods of doing things. You may be sure of a hearty welcome in all directions.

In closing I must express the hope that this present meeting may be distinguished by that harmony and fraternity which have characterized all our gatherings. A thing of which we can be justly proud is the absence from strife and dissensions in the life of this society. Differences of opinions are unavoidable in such a large body of progressive men; but, in this case, each "reverences the other's reverence" and a common loyalty and enthusiasm seem to hold us in bonds that are unbreakable. May this condition continue with us, for it is the *sine qua non* of progress and of that higher growth for which we are all striving.

Report of the Committee on Dental Science and Literature.*

By A. W. Harlan, M. D., D. D. S., Chicago, Ill.

By a resolution passed some years ago a committee is appointed annually to report on what is new in science and literature. Of course, this means dental science and dental literature. In looking over the field of science we note that one paper on "Tubercular Infection" by examination of 220 mouths has been read before one of our own societies by Dr. Geo. W. Cook, of Chicago. This is a subject worthy of more study. Dr. J. E. Hinkins has made a further study on the supposed presence of arsenic in cement powders which is closely related to science, if it is not true science. That, however, I leave for you to determine. George Douglas Head has published a paper on "Leucocyte Count for Pyæmic Affections," which may very easily be turned to account in all deep-seated abscesses as a diagnostic factor.

Many papers have been published on the so-called pyorrhœa but none so far during the past twelve months are to be dignified as scientific. The only really valuable paper of the year is that of J. L. Williams, on "Bacteriology of the Human Mouth" (*Dental Cosmos*, April, 1899). This is far and away ahead of all similar productions published either in medicine or dentistry. Angle's work on "Classification of Malocclusion" is related to science, but as it is one not involving technique I only call attention to it as worthy of study. The various papers read on irregularities and ortho

*Read before the Illinois State Dental Society.

dontia, particularly by C. S. Case, Jackson, Farrar and Goddard, are popularizing this form of practice and creating a demand for more finished artists, anatomists and mechanics than in any similar period since its revival in 1893. The strides in this particular line have been so immense, due to the work of those mentioned and Angle and Guilford, that we are amazed at the perfection of the methods previously so little known. Nothing new in dental caries, or development of teeth; no new knowledge on therapeutics or chemistry that is tangible. None in the further development of liquid air, as, so far, it has not been put to practical use. No new bacilli or other organisms discovered during the year. The studies on cocaine hydrochloride and eucaine B, have not been of more than clinical value. The newest practical antidotes for carbolic acid poisoning are vinegar and alcohol, both of which are on trial. The antidote for opium and its alkaloids which was proposed by Moor, three years ago, grows in favor, viz., potassium permanganate in solution for the stomach, for hypodermic use and also per the rectum.

DENTAL LITERATURE.

During the year enterprising publishers have issued quite a number of new books and several new editions of old books have come out. Among them are found "Methods of Filling Teeth," by R. Ottolengui, M. D. S. This work has been carefully revised and is well worthy of perusal. "Oral Pathology and Practice," by Dr. W. C. Barrett, is one of the new books of the year which may be read with profit. The writer is in favor of one man books, and this is a good one. Dr. H. H. Burchard's "Text-book of Pathology and Therapeutics" is also a good book of reference. Its practice is rather too much lacking in positiveness, but the subject matter is good.

Samsoies' book on "Plateless Dentures" in English is too antiquated for these rapid paces that we are taking. There is a new edition of Harris' "Dictionary of Dental Science," which has most of the new words well defined.

S. H. Guilford's work on "Orthodontia" is a gem from the standpoint of the laboratory worker. Any one can make appliances for regulating by having this book at his elbow, if he knows anything of mechanics. C. S. Tomes' "Dental Anatomy" is such an old standby that it is only necessary to mention it to say that it has been

revised and augmented, so that it is really valuable. A. H. Thompson has written a book on "Comparative Dental Anatomy," which for brevity and conciseness leaves nothing to be wished for It will be valuable for students and practitioners as well.

E. A. Smith, "Dental Metallurgy" is very good and is not too large. It is a good manual. The sixth edition of Gorgas' "Dental Medicine" is out. This book has had a steady sale and should be in all libraries.

The best book of the year comes from a new author, Broomell (I. N.) "Anatomy and Histology of the Mouth and Teeth." Much of the book is original and the story is told so well that you are interested in spite of yourself. The most important books of the year in dentistry have been summarized, but a book that suits me may not appeal to your taste. Brunton's lectures on the action of medicines might suit a number of readers who are interested in medical science from the standpoint of practice.

A. P. Luff, on "Gout," is a good book and it is well worth looking over. R. C. Cabot on the "Serum Diagnosis of Disease" is timely and will repay perusal. White and Wilcox, "Materia Medica and Therapeutics" is a recent valuable work. It has been brought down to date by the American editor and is a safe guide. Dental periodicals have not been blooming so much of late. One, new in Australia, *Australian Journal of Dentistry*, one in England, *The British Dentist*, one in Mexico, *LaRevista Dental Mexicana* and one in Austria. No new ones in the United States or Canada. Two dead in the United States. There is room for a good quarterly journal and also a weekly journal in the United States, well edited, and the contributions carefully selected and paid for.

But one criticism was made last year on this report, that the books spoken of, with others, ought to be exhibited to the society If the society will make an appropriation of $50 to cover the expense, booksellers will exhibit, but unless they are guaranteed a sale they will not go to this expense. There is not much profit in medical books to the dealers except on a large sale, hence the impossibility of getting such a collection outside of Chicago for gratuitous examination. O. Amoedo has published in the French language an interesting work on *L'Art dentaire en medicine Legale* which has not been translated into English.

Dr. Cruet has enriched dental science with a work on *Hygiene et Therapeutique des maladies de la Bouche.*

W. D. Miller, of Berlin, has published a work entitled, *Lehrbuch der Conservirenden Zahnheilkunde.* A careful perusal will show that it should be given wider circulation by being translated into the native language of the author. It should not be difficult to form an international series of dental scientific text-books for universal use. My observation has been that books are not carefully studied. They are only skimmed and not again referred to by the owner unless he has occasion to prepare an article for publication. Reading clubs in large and small towns would be of value to dentists, much more valuable than many of the meetings of societies. I throw out the suggestion for use where no active local societies are in existence. A chapter or two from a standard work would furnish better pabulum for an evening than the illy digested and poorly presented papers that we are frequently compelled to listen to. If practical subjects are needed, read chapters from a practical book.

In conclusion, the writer desires to express the opinion that these reports are only of value if the members will try to look up the works mentioned or the subjects alluded to. To do this will require time, and if it shall stimulate only one listener to store his mind with results of the labors of one author on gout, or syphilis, or surgery, or subjects in dentistry, materia medica, or even in prosthetic dentistry, he will be the richer for it. All matter which gains publicity through the pages of a dental journal is not as valuable as it might be if a more rigid censorship were exercised by editors. In consequence, many of the papers read before societies only become of value when the subject is thoroughly discussed by those present. I believe that a serious defect exists in nearly all societies through a misapprehension of the society for rotating programme committees. Few of the new members of such committees are qualified to select subjects for papers, hence we are at their mercy when, through ignorance or incapacity, they offer to a society a selection of titles of papers which will not show steady advances in all departments of dental surgery. The day for the discussion of ethics and legislation, capping pulps, or other well-worn themes, has passed. What is wanted to enrich periodical literature is the presentation of a series of studies on a given subject by those competent to handle it, and not so much fragmentary knowledge in the schoolboy style. This is an age of rapid advancement, and such subjects as digesting pulp tissue in the

roots of teeth, post-mortem studies of abscess, erosion and electricity from the standpoint of therapeutics, would be of incalculable value. Further studies on calcific deposits in the roots of teeth, exostosis and suppuration might be added to the above. No certain method of producing local anæsthesia for the removal of pulps or the extraction of teeth has been discovered so as to make them of universal application. Studies on the redeposition of inorganic substances to reconstruct alveolar processes would be hailed with delight by the whole profession. Mechanical procedures are far ahead of the strictly scientific, and it is only now that we are beginning to appreciate the work that has been done in the perfecting of alloys. So much might be said of the necessity for this kind of work that we hesitate to foreshadow the benefits that would accrue to mankind if such grave subjects should engage the attention of the studious investigator. The labors of such men of science as Miller, Andrews, Mummery, Broomell, Black, Rose and others should stimulate those who have a fancy for knowledge, aside from its commercial value, to delve further into the region of the unknown subjects, which we have faintly outlined, and thereby enrich the field of dental science.

Facial Art.*

By J. N. McDowell, D. D. S., Chicago, Ill.

"Art is the disposition or modification of things by human skill to answer the purpose intended."

Art is so broad in its general meaning that perhaps a word of explanation would be apropos. Arts are divided into the useful or mechanical, liberal or polite. Mechanical arts are those in which the hands and body are more concerned than the mind. Such are the arts of the carpenter, the blacksmith, the clothier, etc. These arts are generally called trades. Liberal arts are those which give scope not merely to manual dexterity, but to genius as poetry, architecture, music, painting, sculpture, etc.

As the subject of this paper pertains more particularly to liberal arts, let us consider the subject more in detail. Liberal art appeal distinctively to the senses of passion, imagination and comparison. It portrays to the mind the usefulness of beauty and harmony; it discriminates between the right and wrong, the perfect and imperfect, and gives to mankind knowledge of facts

*Read before the Odontographic Society of Chicago.



FIG. 1.



FIG. 2.

detail. From time immemorial poets have sung the praises of beautiful heads and faces. They have portrayed to the world in verse and song these silent, graceful lines of the features, yet wherever we may travel, in different cities or countries, we can always find imperfect and inharmonious features—the tongue may be silent, but the mouth never ceases to speak. Harmony of the outline of a head and face is beauty; inharmony of a system promotes discord, and discord is the medium through which harmony and recognition are destroyed.

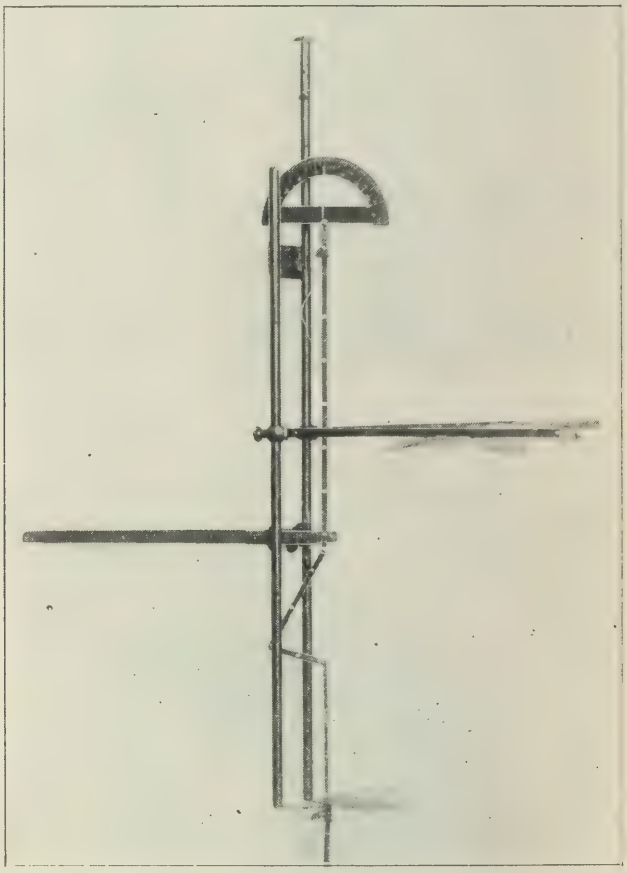


FIG. 3.

Liberal arts have accomplished a great deal in promoting a true appreciation for the æsthetic beauty of the human face, and painters and sculptors have labored long and earnestly in their endeavors to portray beautiful faces. To-day we are dealing with the animate subject. We are molding and contouring the human face itself and not its shadowy outline. Resultant causes have cautioned us to use judicious care. If a change is wrought notice



FIG. 4.



FIG. 5.

ably above or below the normal, it stands out in humilation, an appealing figure to carelessness and lack of knowledge. The more advanced we become in this art of changing or modifying the features, the more necessary it becomes to have fixed principles to follow and adhere to. *No* special attention has been given for an outline or a systemized form of the *marked deformities* of the facial aspect, *founded upon the science of occlusion and modified forms of malocclusion.* And yet every change in the contour of the face as a result of malocclusion of the teeth, or changed position of the lower maxillary, bear and reflect upon each other. Every individual will express himself in an uncertain way of the beauty or dis-

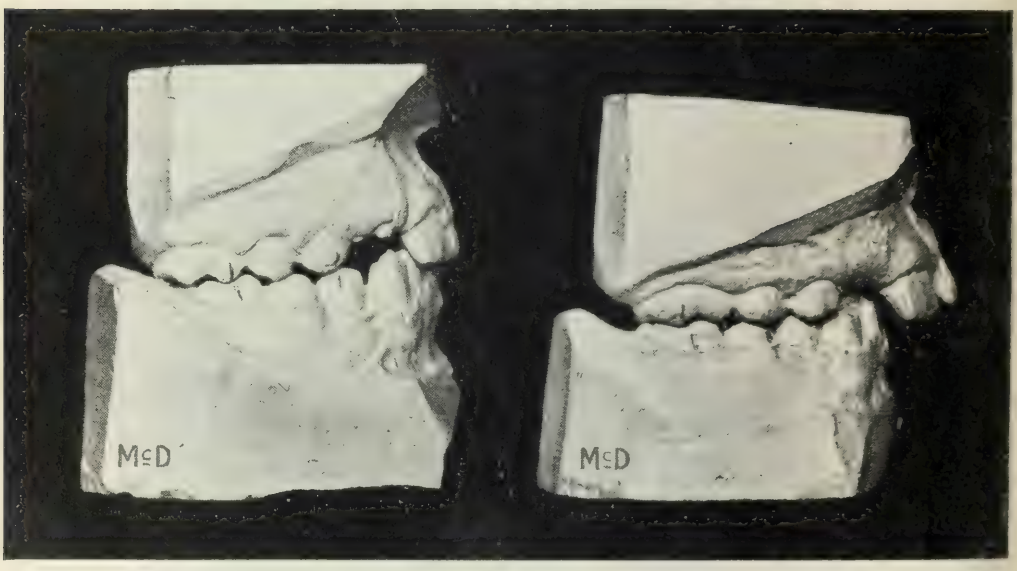


FIG. 6.

figurement only as it appeals to him. Without classification or stipulated form, a correct understanding will never satisfactorily exist in dealing or speaking of the conditions of the facial outline in this branch of dentistry.

The bones in the features of man were developed for a special function, and nature has intended that perfect harmony should exist. Any disturbance or change from the normal marks and mars the conformity, and he becomes a subject of discrimination. The question then arises of the location and cause of the changed parts of the features. Locality in all cases associates with that part of the features not in harmony with the normal facial angle. The cause in most every case can be found to exist with the maxil



FIG. 7.



FIG. 8.

lary bones and their appendages, the teeth. Normal occlusion of the teeth is the fundamental principle or basis to work from and to work for. The science of orthodontia is founded upon occlusion. It has been only a matter of a few years since the correction of malocclusion was practiced upon the principle of chance and guesswork. Few indeed, seemingly, considered it worth the while to take good, perfect impressions of the upper and lower arches and study them in connection with the facial outline. To-day it is necessary in our profession in correcting malocclusion, to secure perfect models of the upper and lower arches, and to carefully and thoughtfully study the occlusion of the articulated models, in connection with the facial outlines.

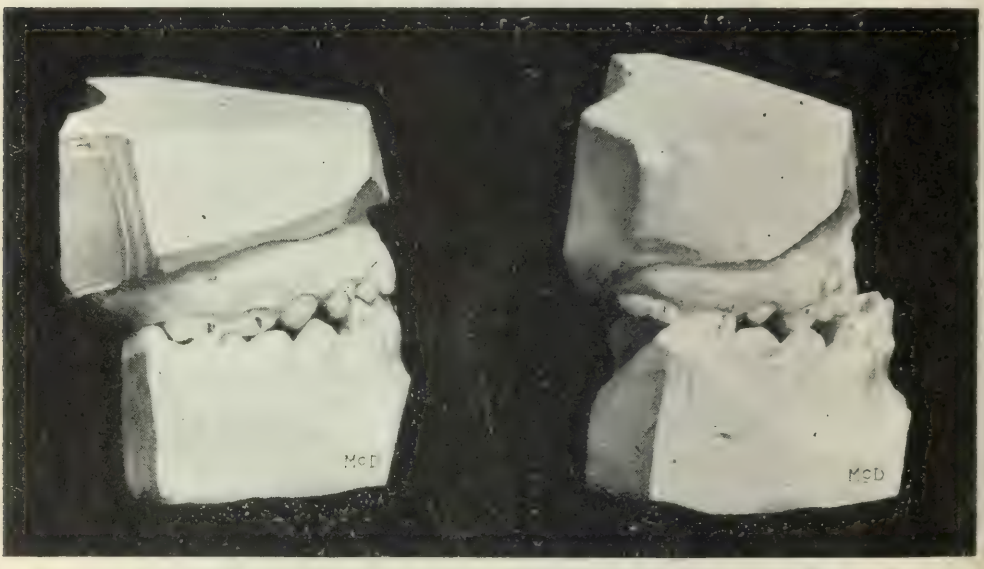


FIG. 9.

In order to enable me to carry on my study on this subject more systematically, according to the general outline of the features, I have placed them under three divisions, namely, the first may be outlined as the classic, that form relating to the ideal or perfect type (Fig. 1) which to-day exists only in sculptured form and in literature, such as Apollo Belvidere, the Venus de Milo and others. The second may be outlined as the normal type (Fig. 2). This type may consist of all that form where no noticeable variation of the conformity of the facial outline has taken place. Features that are to be seen in everyday life. The third type embraces all such class from the noticeable variation to the greatest change of the position



FIG. 10.



FIG. 11.

of the upper and lower lips and chin from the normal facial angle as the sequence of malocclusion of the teeth or malposition of the lower jaw (Figs. 4, 7, 10, 13, 16). I have constructed an instrument (Fig. 3) by which it is possible to ascertain the degree of the normal facial angle and its deflections in degrees or modified changes of the touching points of the features caused by malocclusion of the teeth, or changed position of the lower jaw, whether above or below the normal. With the majority the facial angle seems to exist as rather indefinite, as they never state where it is and how accurately determined.

In making use of the normal facial angle in comparative study

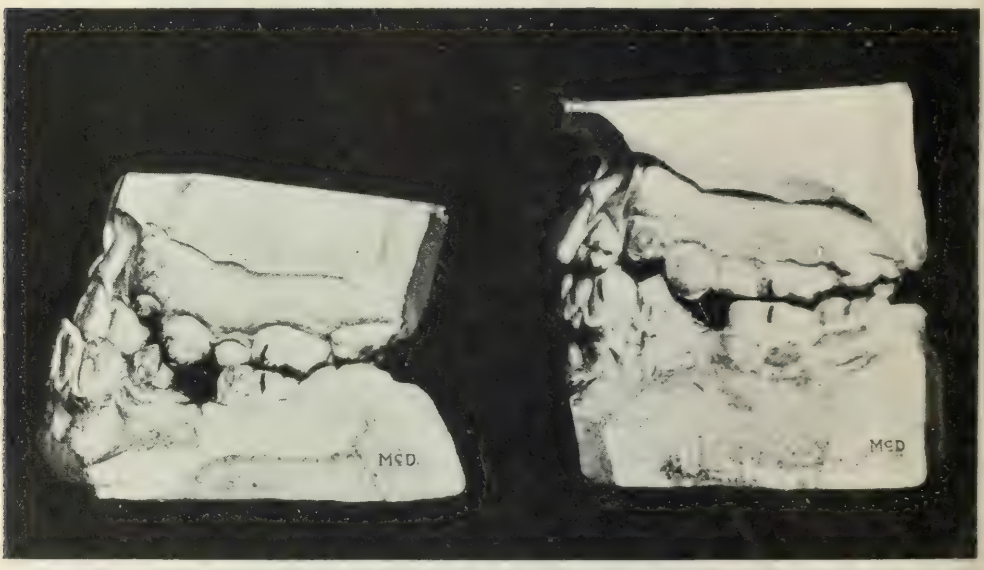


Fig. 12.

of faces, I do not use an angle line passing down either side of the nose as commonly used, for those places are neither the greatest peripheral points of the profile nor the center or medium line of the face. To overcome this it was necessary to construct a special instrument, which will be shown and explained later with the lantern slides.

The normal facial angle then, in my estimation in its application to this subject, should touch at that point of the forehead lying directly between the inner angles of the eyebrows, passing downward and touching lips and chin. Viewed from a side view, this angle line gives the slant of the profile and touching points, and by the slant of this angle the modifications in the degrees of



FIG. 13.



FIG. 14.

the angle and changes at the touching points can be ascertained which will designate the perfection or imperfection of the features and location. The standard degree of the facial angle is about 82°. The lower the degree that is indicated, the lower down the scale of intellectual type of man it is placed, until it reaches the animal kingdom. When the normal facial angle is broken or varied by the changed position of the lip or lips caused by the position of the teeth, they being prominently forward or depressed backward, either in the upper or lower arch, or both, or by the changed position of the lower jaw in its retrusion backward or protrusion forward, changing the occlusion and position of the

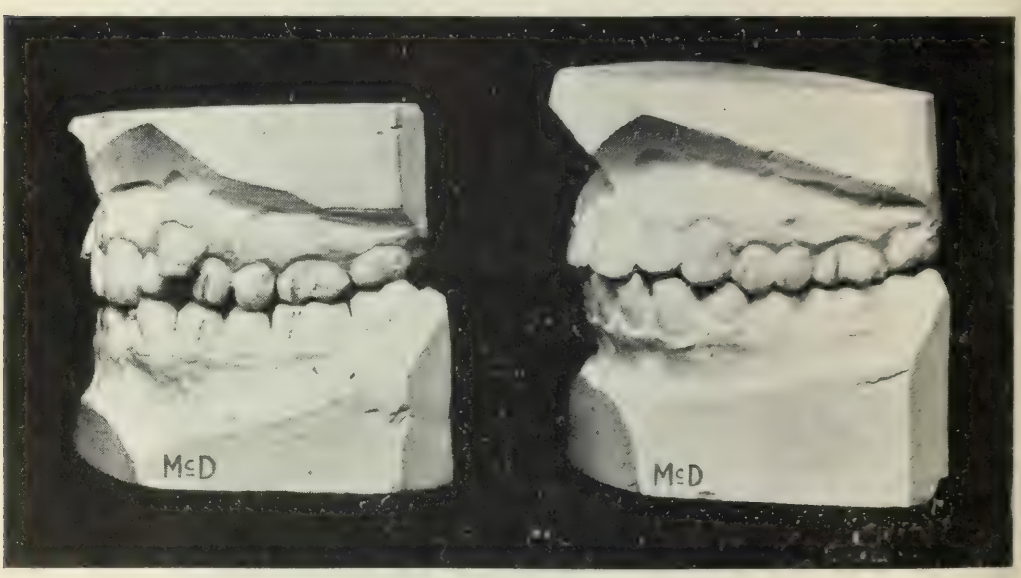


FIG. 15.

lower lip and chin, all of these changes break the harmony of normal facial angle at some point, and mar the contour of the features. These conditions I have concentrated into a classification, so that each change and form can be placed into a class.

Starting with that class which is within possible attainment, and as a standard to work toward, we can use the second division of the three divisions outlined above. The classification is outlined as follows :

1. Normal Type. Subnormal, first form; subnormal, second form; subnormal, third form; subnormal, fourth form; subnormal, fifth form.

Description of classification :



FIG. 16.



FIG. 17.

The *normal type* (Fig. 2), as before stated would include all of that class with regular harmonizing features and the facial angle line normal and unbroken at touching points, i. e., forehead, lips and chin.

Subnormal type, first form (Fig. 4), would include all of that class where there is retrusion backward from the normal position of the lower jaw (sub mentum). The occlusion of lower teeth distal. The upper lip is prominent. The harmony of the facial outline is changed by the lower lip and chin having dropped backward from the normal facial angle. The degree of the facial is more or less changed. Fig. 5 shows completed change. Fig. 6

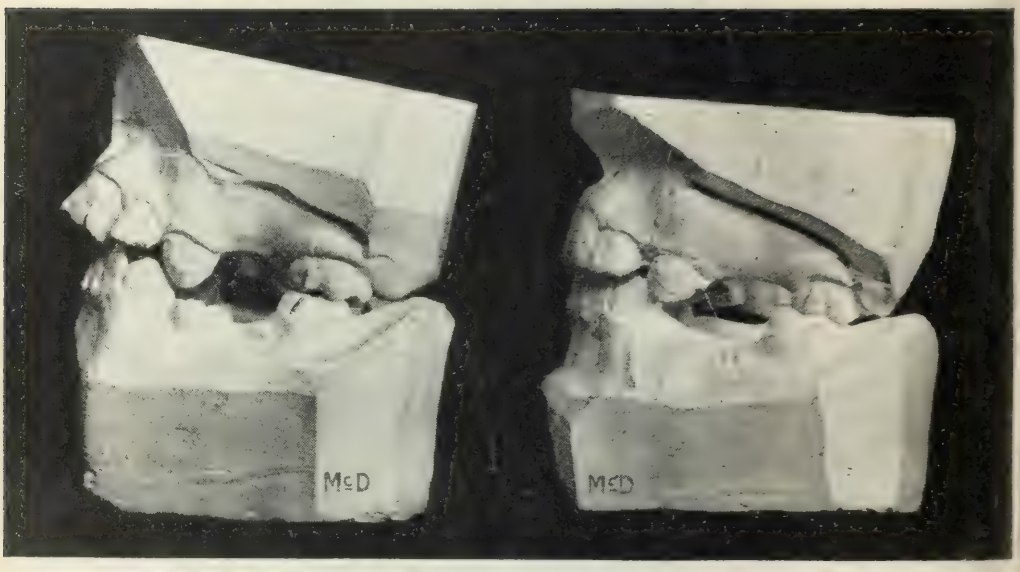


Fig. 18.

shows the change after transition of occlusion has taken place from malocclusion to normal occlusion.

Subnormal type, second form (Fig. 7), would include all of that class where there is protrusion forward from the normal position of the lower jaw (pro mentum). The occlusion of lower teeth mesial. The lower jaw being forward changes the angle from the normal slant, thus changing the degree of the angle. The position of the upper lip is normal but does not touch the angle line owing to forward position of the lower jaw, which changes the slant of the angle and breaking the harmony of facial outline. Fig. shows completed change. Fig. 9 shows the change after transition of occlusion has taken place from malocclusion to normal occlusion.

Subnormal type, third form (Fig. 10), would include all of that class where position of jaws are normal, occlusion of the distal teeth normal.

There is a lack of development of the anterior part of the upper maxillary bone (subintermaxillary development). The upper anterior teeth occluding distal to lower anterior teeth. The upper lip being flat and sunken in. The harmony of the normal facial angle is broken at the touching point of upper lip, the upper lip not touching the facial angle. The degree of the angle is not changed, owing to normal position of jaws. Fig. 11 shows completed change.

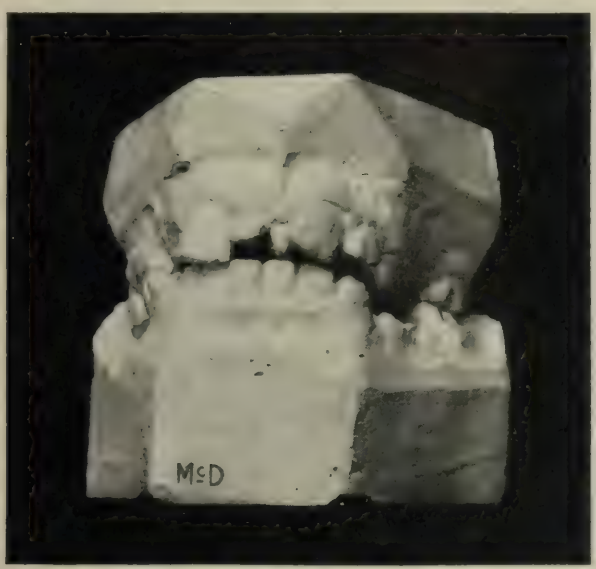


FIG. 19.

Fig. 12 shows position of teeth before and after a change has taken place.

Subnormal type, fourth form (Fig. 13), would include all of that class where position of jaws are normal, occlusion of distal teeth normal. There is a lack of anterior alveolar development (subalveolar development), either upper or lower lip being flat and drawn backward, but usually both lips. The harmony of the facial outline and normal facial angle being broken at the lips not touching, or only partly touching lips. The degree of the normal facial is not changed. Fig. 14 shows completed change. Fig. 15 shows position of teeth before and after change has taken place.

Subnormal type, fifth form (Fig. 16), would include that class where position of jaws are normal. Occlusion of the distal teeth may be normal on both sides, or it may be normal on one side

only. There may be an overdevelopment of the anterior or lateral part of the arch either upper or lower. There may be supernumerary teeth, there may be abnormally large teeth, thus changing the position of lip or lips. Harmony of facial outline and normal facial angle being broken at lip or lips, the prominent condition changing the degree of the facial angle. Fig. 17 shows completed change. Fig. 18 shows change of position of anterior teeth. Fig. 19 front view, showing two supernumerary teeth between centrals.

As before stated, these conditions modify or change the touching points of the angle or the degree of the slant of the normal facial angle. The classes and conditions just outlined I will now illustrate with the lantern, showing first comparative studies of the outlines of the features and the varied changes of the normal facial angle, and concluding with the classification showing the modification of the contour of the facial aspect, outlined in each individual type of the classification, and the changes that have been accomplished in molding the features of the animate subject.

[Seventy lantern slides were used in illustrating this subject.]

Immediate Regulation.*

By A. F. James, D. D. S., Oak Park, Ill.

Every member of the profession present to-night will agree with me in the argument that in the practice of dentistry it is necessary for the practitioner to give the greater portion of his time to the perfection of little details; giving his attention to this little thing and to that little thing, all of which are important, even absolutely necessary.

It has been my observation during the few years in which I have been in the practice of dentistry that the greatest mistakes and the largest number of failures result from the neglect of little things—not taking the time to finish fillings perfectly, or attempting to insert fillings without sufficient separation, or neglecting to trim enamel margins carefully, the inserting of gold fillings with the pulp in an inflamed condition or not properly protecting the pulp. These and many other things which you could mention as well as I. But one more I must speak of, and that is, not thoroughly instructing our patients how to take care of the teeth, or more plainly speaking, how to keep their teeth *clean*.

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*Read before the Chicago Dental Society.

In cases of orthodontia no doubt the majority of you have felt as I have, the need of some method by which the painful and long drawn out process of bringing the teeth into their proper position might be abridged. A partial solution of this problem, I believe, lies in immediate regulation by surgical procedure. Certainly, all cases are not amenable to this treatment, but in many instances a single malposed tooth standing inside the arch can be brought into perfect alignment by this method at a great saving of time and patience to both operator and patient.

It is needless to dwell upon the trials attending even a single case of regulating with appliances.

In selecting the cases for immediate regulation the operator must be governed by the age of the patient, by the space that exists, or that can be gained before operating, and by the change of position or angle to which the tooth can be moved without changing the position of the apical end of the root. These limitations, you will observe, confine us to the anterior teeth. Taking for example a malposed superior lateral incisor standing inside the arch, my method of procedure would be to first use as an anæsthetic either gas or some local application. After gaining the effect of the anæsthetic, I would use a three-quarter inch disk steel saw mounted on a mandrel in the engine, and cut a deep incision through the gum and process on each side of the tooth (mesially and distally), extending the incision as far toward the apex as possible. Then place a block of hard wood, previously prepared, so it will rest upon the teeth on either side of the tooth being operated upon, the block cut out so as to allow the tooth to be moved forward into line with the others; then take a pair of narrow beaked incisor forceps, place one beak upon the block of wood (held in position with the left hand) and the other on the lingual side of the tooth to be moved. Force the forceps well up on the tooth, then with a gradual, steady pressure, force the tooth forward, carrying with it the block of process and gum tissue attached to the labial side of the root until the tooth is in the desired position; you are then ready for the retaining appliance. Use either ligatures, tying the tooth solidly to the central and cuspid, or if something more firm seems advisable, fit gold bands to the incisor and cuspid with an open tube soldered to them so that a stiff piece of piano wire may be placed in the tubes and secured by pinching tightly with a pair of flat nosed pliers. Then tie a ligature firmly

about the lateral incisor and fasten it to the wire, keeping the retaining appliance in place until the tooth becomes solid.

The patient should be seen every second day and the parts thoroughly cleansed until the gum tissue has healed. In my opinion this operation can be successfully accomplished in any case without fear of destroying the pulp, providing the patient is under twenty years of age, the apical opening of the root being large enough to permit of more or less stretching or straining of the pulp without breaking it loose from the surrounding tissues, or causing inflammation sufficient to destroy the pulp. In an adult, as you know, the pulp canal is small and the apical attachment so small that we run a greater chance of destroying the pulp, although out of a number of cases in my own practice where I have operated for adults I have caused the destruction of but one pulp. My reason for operating for adults in several cases has been because of a tendency or even advanced stages of pyorrhœa alveolaris resulting from the patient's being unable to properly cleanse the parts and to keep the gums hard and firm around the necks of the teeth. In each case where I have had this condition, the result of placing the tooth in position where it will receive the proper amount of care I have found a complete cure for the pyorrhœa alveolaris.

While I believe in being conservative and have no radical tendencies, I do believe it is time for the dental profession to take advantage of their knowledge and skill as oral surgeons and in cases where by a neat, clean surgical operation (be it ever so simple we can accomplish good results and overcome many trying long drawn out corrections of irregularities, it should be done.

I may have made it seem that this operation is so greatly limited that it is of no consequence; but my idea has been to simply bring out the successfulness of the operation, and allow individual judgment to decide when it is applicable.

Those of you who attended the World's Columbian Dental Congress will remember the paper read by Dr. Geo. Cunningham of Cambridge, England, and the discussion which followed upon this subject; his paper made a fixed impression upon my mind and this impression grew as from time to time I came in contact with vexing cases of irregular teeth. I read and reread his paper in the published transactions of the World's Columbian Dental Congress. But although I give Dr. Cunningham credit for the ideas

have on the subject, I must say that Dr. Cunningham's paper does not encourage one to try the operation. He held that the apex of the tooth could be freely moved and that it was preferable to perform the operation for adults. My opinion and experience differ from his upon those two points, as previously expressed in this paper.

Open Face Crown vs. Contour Filling, or Richmond Crown for Incisors.*

By H. T. King, D. D. S., Fremont, Neb.

To illustrate my subject, we will imagine a central incisor. The mesio occlusal angle gone; the disto-occlusal angle so undermined that no good operator would think of filling it without removing it. White decay, the kind formerly described as occurring in soft teeth, has penetrated in all directions, and we may or may not have pulp complications. The enamel of the labial face of this tooth, when not already broken away, seems perfect, but without a good support of healthy dentine.

Now we have the tooth, what is to be done with it?

The incompetent operator, or the one who seeks an easy way to gain a living from the practice of dentistry, will tell the patient that the teeth are too soft to hold gold fillings, and will either extract or plaster up with cement, thereby gaining a small fee, but without doing the patient any permanent good. The worst feature of that kind of practice, however, is that the faith of that particular person, and possibly many of the friends, in the ability of dentists to save teeth, is weakened, if not entirely destroyed. How often we hear something like this: "Dr. So and So (and he is a good dentist, too) told my sister that her teeth were too soft for gold, and my teeth look just as soft."

The expert operator, who must also be an enthusiast, will take the tooth, and by liberal cutting, get fairly good enamel walls, will cut a groove through the occlusal surface, shorten the lingual plate of enamel, and by thus connecting the two cavities, make a large contour filling that will be secure, as fillings go. This is an operation that is very tedious and trying, both to patient and operator, and you have, when done, for the cutting edges, a soft gold, or at least a platinized gold, either of which, if brought to a thin incisal

*Read before the Nebraska State Dental Society.

end will soon show signs of batter and wear. This kind of an operation is not to be condemned, but for suitable teeth, highly recommended. There is a point, however, to the most expert gold builder, and reached all too soon by the average operator, when the filling of such a tooth will not be thought advisable, and it will be cut off and the root crowned. It is just at this border land between reconstruction and destruction, that the method that I shall advocate comes in.

Those of you who were not in the practice of dentistry twenty years ago, can hardly realize the advance made by developing the modern methods of crowning roots and badly broken down teeth; but that too many teeth are being cut off, or crowned with shell crowns, I think no observant person will deny. Teeth with scarcely more than a compound cavity, and those that the average operator ought to be able to successfully fill, are being crowned with all gold shell crowns, and other teeth, if further front, are constantly being cut off, and Logan, or other crowns, stuck in their place.

To return to my subject: How would I restore the tooth a little too far gone to fill, and the loss of structure does not necessitate a crown? In my title, I have designated this as an open face crown; it is hardly that, for as shell crowns are usually made, as little gold and as much cement as possible is used, while in this case, as much gold as is necessary to make contour, and as little cement as possible is used. It is hardly an inlay, either, although the inlay principle is used in making it. I proceed as follows:

First trim away all enamel which is frail, but leave much more of the labial plate than would be admissible for a foil filling. With disks, remove all the enamel from the proximal portion of the cervix on both sides, giving a flat, highly polished surface. Remove a portion, at least, of enamel from lingual aspect. Shorten tooth a very little, beveling from both sides. Cut out decay, and if this leaves the cavities so deep or irregular that impression can not be taken, fill the deep parts with gutta-percha. The work can all be nicely done in the mouth, but I find that time is saved and the patient relieved, by taking a plaster impression and making a fusible metal cast. A perfect reproduction of the tooth in metal can be quickly obtained by slipping into the proximal space on either side, a piece of cardboard just thick enough to fit, letting it press the gum back a little from the interproximal space.

If I wish a pin or dowel to extend into the pulp canal or deep

portion of cavity for anchorage, a piece of round wood toothpick is put in place, and comes away with cardboard in impression. When the impression is filled with Melotte's metal, I have a more or less perfect model, to which my gold is approximately fitted.

Take a generous piece of 24 k. gold, 32 to 36 gauge, and by pressing, burnishing, and trimming over all the lingual and proximating surfaces of tooth, the gold on the proximal sides cut off just even with cutting edge, that covering the lingual side extending so as to fold over and fit to the shortened occlusal surface.

My way is to first fit to one proximal surface, forcing gold into more depressed portion, with a piece of erasing rubber under instrument. Slip from model and flow enough 22 k. solder to stiffen it. Replace on model, drive piece of soft wood between adjoining tooth and gold that I have melted on, thus holding firmly in place while I burnish and fit to the whole lingual surface; remove and flow on gold. Replace, fasten in place, and fit gold to other cavity and proximal surface. The gold being thin and pure, all this can be quickly done.

The solder is to be laid on in small pieces, a little at a time, and heat enough given to barely melt it, for until it is fitted to tooth in mouth, no solder is to be allowed to flow onto the part that is to be fitted over end of tooth and edges of labial plate of enamel. This is important, for upon the close adaptation of gold to tooth at exposed point depends the good appearance of the finished work, and, in a great measure, its durability as well. I have an idea that the best way to add piece by piece of solder is by the use of the mouth blowpipe. Possibly that is because I enjoy the use of that instrument, and have become somewhat of an expert from having done all my crown and bridge work in that way. Others may get as good results from a mechanical blowpipe and bellows, but I have no use for them, except to melt a large batch of gold.

Our piece of work is now fitted to the model and made rigid enough to handle without fear of bending. We remove from model to tooth in the mouth and burnish to the enamel. Remove very carefully, paint the inside with whiting or finely ground asbestos and invest; sufficient gold is then added to make necessary contour. You are all workers in gold and have your own way of doing this, so I need not dwell upon it. A perfect polish out of the mouth is to be given to all parts except the labial face; a rough polish will do there, as this part is to receive its final polish in the mouth after cement has hardened.

If the work has been neatly done, cement will not show, and you have, to all appearance, a contour gold filling with less gold showing, however, than if built up and with an occlusal surface made of hard gold, that may with safety be brought to as thin a cutting edge as desired.

I have said nothing of anchorage, and some may be asking the question, "Will it stay?" The tooth having gold on all sides except labial, no ordinary force can dislodge it when applied in any direction, unless down or in—the two directions not necessary to particularly guard on the upper jaw. As a rule, I depend upon the fitting of gold into the two proximal cavities and turning over the beveled occlusal edge, or if not necessary to turn the end and have gold show, fit into groove cut through occlusal surface. This is but slight anchorage, but sufficient to prevent the crown from tipping in, unless it first comes down a little.

The method I present for the restoration to form and usefulness of badly decayed incisor teeth is not universal in its application, but in the last six years I have found many places where it seemed to me the best method, and it has given great satisfaction, both to myself and patient. I have used it oftenest on frail lateral incisors of the upper jaw, but in a few cases have found it just the thing for lower incisors so badly gone that I have doubted my ability to restore with gold fillings, and did not consider them good subjects for porcelain crowns. Have also had some pleasing results from applying the principle to bicuspids, when I have found the buccal enamel and cusp in good condition, yet the tooth demanding a crown of some kind. You can give such a tooth the appearance of having a contour filling, with but little more work than making a shell crown, and the finished work will be much less conspicuous. For a bicuspid, a good strong pin should extend from gold on occlusal surface well into pulp canal, as strong anchorage is demanded. I do not know as I have made myself very clear as to why I object to Richmond crown. I do not object to the Richmond any more than any other, but take the position that a crown should be the very last resort. I do not think the Richmond crown the thing of beauty and joy forever that some esteem it.

If you do succeed in banding the root so that it will be protected without infringing upon the dental ligament or making large show of gold, in matching the color and shape of adjoining

teeth and in retaining the shade after passing through the fire, you have a presentable case; but permanency is not secured, and your tooth will not be a match in color when ten years have been added to life of patient. The natural teeth will darken with age, and the artificial remain the same. I will grant, for argument, that your Richmond crown will last for fifteen years. I have no fear but what I designate as an open face crown will last for ten years, and at the end of that time the tooth will be *in just as good condition for cutting off and crowning, as now.*

I submit this with the thought that the method may be new to some of you, and that if it will, as I claim, add ten years to the usefulness of some teeth, it is worthy of your consideration.

Practical Points.*

By Dr C. W. Graff, Tecumseh, Neb.

Two things enter prominently into the make-up of a practical man or woman, namely: Thoughtfulness and Thoroughness, in the everyday duties of life. If I wished to be truly successful in the highest sense of the term, and could not have both these elements, I should choose the former. You *can* be too thorough—sometimes overdo a thing—but you *cannot* be too thoughtful; the more thoughtful we are, the more useful we become.

When a case simple or complex is presented to us for diagnosis or treatment, if we will but stop to think before passing our judgment upon it of the possible results of the different modes of treatment, weighing carefully the conditions as we know them to exist, relegating to the rear for a moment the financial standing of our patient, our decision is very apt to be reasonable and practical.

In this day of fast living, we are getting into the habit of not counting the cost of such a course. The more we do and promise, the more the public expect of us, and many are the men and women who go down under *this* strain every day. This state of affairs looms up before us as a vast monster, in all the vocations of life, ruining and unfitting us for the more responsible and practical duties. For example: Why is it that many of us are not often as successful as we might be in certain cases of plate work, or treatment of the oral cavity in any of its various forms? The trouble

*Read before the Nebraska State Dental Society

frequently lies in the fact that we put an unreasonable estimate upon our mechanical skill, regardless of the sanitary habits of our patients.

Take a beautiful piece of bridge work—almost perfect in its construction—but will it prove a practical operation if inserted in a mouth that is a stranger to cleanliness? It is our duty to tell such people, in a straightforward but kind manner, that unless they will promise to follow your instructions, you do not think it best to proceed with the work. Often this will have a good effect; of course some will soon forget that they ever had an operation performed, and lapse back in the old habit of neglect.

In practice, we find this state of affairs among rich and poor, refined and ignorant, and it is a hard problem to solve. For no matter how much pains we have taken to do the work well, it will soon return to us to be done over again, and if we do not comply with all the *unreasonable* demands of the patient, they go away and say uncomplimentary things about us and our work.

I always put a higher estimate upon the strict sanitary habits of my patient than I do upon my own skill. It is not this class that gives us the trouble; the work, with few exceptions, giving entire satisfaction, and these persons usually are high in their praise of Dr. —— as a skillful workman. Therefore, we can be more liberal in our promises to the latter, but to the former class we should be extremely careful when they ask us how long we will stand good for any work we may do in their mouth.

Another mistake which I think is sometimes made, is that of putting cement under gold in contour filling. Frequently it is done to save gold, and time as well. I am speaking of contour fillings only. Dr. Hambly in the "Practice Builder" says: "The plan is a questionable one." The best foundation for gold is gold. Where the cavity is deep, bordering on an exposure of the pulp, is it not more practical to devitalize—with possibly few exceptions—or fill cavity entirely with cement?

A great deal has been said and written, both pro and con, relative to clasp plates; my observation has led me to regard the clasp plate, or bridge, as impractical. I am drawing my conclusions from what I have seen, and what I read upon the subject. I have never seen one yet that after a time did not wear upon, or loosen the teeth clasped. It is said there is a remedy for this in the crowning of the teeth to be clasped, but many people object to the extra

expense of crowning a sound tooth. At any rate, it seems to me we should use a clasp plate as a last resort, unless the patient is willing to pay for the precautions against injury to teeth and gums by crowning.

"Drugs are a blessing if rightly used,
But a terrible curse when much abused."

For instance, I remember a friend of mine telling of a dentist of his acquaintance who, on the occasion mentioned, was treating a lower cuspid with a fistula opening externally upon the face. His plan was to cure the fistula before filling the tooth permanently, and in order to do this, he instructed the patient to come to his office every morning, and each time he forced a ninety-five per cent solution of carbolic acid through the opening. Much to his surprise, after treating thus for two weeks, it was no nearer the healing point than when he commenced. Fortunately for the patient, at this stage of the proceeding a severe snowstorm swept over the country, and the patient failed to put in an appearance that morning. The next morning it seemed to be better, and when he did return four days later, there was no more chance for treatment, the fistula having closed and almost healed externally.

Cases parallel to this one happen frequently among physicians as well. Whatever we do in the way of treatment, let us be practical, not losing sight of the great fact that the drug in itself does not heal when applied, it simply checks disease, giving nature an opportunity to restore the lost part to a normal condition.

I might name many other points wherein we sometimes fall short of being practical, but these are sufficient to remind us that to be thoroughly practical in all that we do requires a thoughtful mind, tact and patience; without these three things, we cannot hope for success to any great extent.

PROCEEDINGS OF SOCIETIES.

Chicago Dental Society.

Regular meeting, March 7, 1899. The President, Dr. J. E. Hinkins, in the chair.

Dr. A. F. James read a paper entitled, "Immediate Regulation."

DISCUSSION.

The discussion was opened by Dr. H. J. Goslee, who said: I have had the pleasure and privilege of Dr. James' paper for a couple of days to peruse, and I find features in it that are indeed very commendable. In the first place, the doctor advocates that it is high time for the dentist to realize his knowledge and skill in those lines which will permit him to resort to surgical procedure. I think it is indeed time that we considered those things. In the second place, the doctor starts out with his paper in telling us of the absolute necessity for considering the minute details of operations, no matter how simple or how great they may be, which I think is very important.

Regarding the operation the essayist describes, there is no doubt in my mind but that in certain instances, where it is applicable, it is a good one. I believe there is a little originality in his method of cutting through the soft and hard tissues with a steel saw, facilitating the movement of the process and the root of the tooth. There is no question at all but that a tooth can be bodily brought forward in this manner without any danger to its vitality because the surrounding hard tissue adjacent to the apex of the root becomes a fulcrum, and the end of the root itself is probably not moved at all, so that the crown and the lower half of it can be brought out into line without any possible danger, I take it, of disrupting the nerve and blood vessels entering the apex, so that I would imagine there would be no danger of destroying the vitality of the tooth. But it seems to me that we meet with cases of inlocked single teeth so seldom that this operation is hardly applicable in many cases. Where it is applicable, it also seems to me that it matters little whether we spend three weeks in moving a tooth out by constant, steady pressure with a simple appliance, or whether we spend a like time in moving it the first day and treating it afterward. The doctor says it is necessary, to prevent infec

tion and possible sloughing, to treat the tooth daily for at least three weeks after operation. It seems to me it would be equally easy for us to pull this tooth out by mechanical means and spend three weeks in doing it, and I do not believe we would have the extreme soreness and inflict as much pain as we would by immediate regulation of a tooth of that kind. When it comes down to moving a single tooth of the kind spoken of, the greatest difficulty first of all is to get accommodation for it in the arch, and it often becomes necessary to put some kind of appliance on the mouth to secure accommodation for the tooth. That same appliance will oftentimes move the tooth into place as well as secure accommodation for it.

One point I would object to particularly in the paper is the use of a retaining appliance, as suggested by the doctor. He mentioned placing a piece of Stubb's steel wire in the open tubes that are on the adjacent teeth to the one moved. I do not think Stubb's steel wire should ever be placed in the mouth, because its susceptibility to oxidation makes it so irritating that the tissues coming in contact with it are always constantly inflamed. Of course, we can overcome that by plating it, but it is difficult to plate steel, because it has first to be subjected to copper plating, then gold plating, and it is not an easy matter to do it. So I take the stand never to place steel in the mouth, because I do not believe there is any indication for it. I think we can accomplish the desired purpose with other things as well as steel and avoid the possibility of inflaming the tissues, as steel will do. I would commend the operation in those cases where we have plenty of space, providing we are not sure we can see the patient more than a week or ten days after it is accomplished; otherwise, if we have a patient we can see when we desire, I believe we can accomplish the operation much more safely and better by slower means, for the reason that we would not have to treat the tissues of the mouth afterward, nor would we inflict any great pain upon the patient.

Dr. GEO. T. CARPENTER: I do not know as I can add to what has been already said. I had the privilege of reading the paper, and I consider the method of cutting an original thought, as far as my knowledge is concerned. There are several different methods of forcible correction, one by Dr. Talbot, which is to remove a portion of process with the bur immediately in the line in which the tooth is to be moved. But in that case you really move the

tooth, or a greater portion of it, into a new socket, while in this case under discussion the socket is moved bodily, or a greater portion of it. In this way we keep the peridental membrane intact and prevent greater injury than we would have from some of the other methods. The doctor made mention in the paper of curing pyorrhœa by this method. In some cases, possibly where inflammatory conditions are set up, the renewed energies might be sufficient to help that form of disease, where the disease is in its incipiency, but I fail to see how we can cure the disease without resorting to some means of removing the cause. I do not think that true pyorrhœa cases would be benefited by this method. At the commencement of his paper he spoke of the little things, and among them was teaching our patients how to keep their teeth clean. That has been a subject of considerable study with myself, and I would really like to hear some one read a paper before this society on that subject. I believe from observation that as dentists we do not keep our own teeth clean. Not only that, but in giving our patients instructions no two dentists recommend the same methods. As a profession we should understand each other and lay down a systematic method of keeping the teeth clean, so that it can be done in a proper way. In the line of oral surgery, as the paper suggests, there are great opportunities, particularly for the young men, and I would like to see them start with ideas whether they are original or not. If they have found something that they believe to be good, let them try it. If they can improve on it, it certainly will benefit the profession, which is preferable to simply adhering to old stereotyped methods. I would commend the paper, therefore, and I would like to hear more such papers from our young men.

Dr. I. A. Freeman: I shall occupy but a few moments of your time. I have been deeply interested in Dr. James' paper because I have had a recent experience with a case somewhat along the line suggested. That this idea is not altogether new to the profession is true; it has been advocated for several years by different individuals. With reference to moving teeth within the arch rather than without, cutting away sufficient amount of bone to admit of carrying the tooth into position, which is more difficult than moving them out, recently I had a case of a cuspid tooth in the mouth of a patient about twenty-two years of age, a young lady, which had erupted quite late, the apex of the cusp as show

by this cast just appearing through the gum. After applying force by means of a spring and attached to the bicuspids and first molar which were banded together and jackscrew across the mouth, I was unable to move the tooth; it was so rigid in position, I became satisfied something more radical would have to be attempted. So I took the case in hand, not having become acquainted with Dr. James' method, and adopted a plan of my own perhaps, or what was suggested in this case. I opened the gum along the line of the tooth, dissected away, and found very hard, true bone covering it, which I removed by the use of the mallet and chisel on either side, cutting it away as far as the first two-thirds of the tooth; then I brought my jackscrew into play, and it was very readily moved into position. You will notice the result in this cast. I think I was about ten days, possibly two weeks, in moving it to position. It has become elongated since the removal of all appliances to move the tooth for its relation with the other teeth. I have an appliance in position to retain it from passing back into the mouth. This is a simple case in practice which I submit to you.

Just a word or two more. In looking over the history of my own experience in dentistry I find that I have met a number of such instances which could be readily cared for and the teeth properly brought into line with this class of operation which were so firmly fixed that I was unable to carry them to their proper positions.

Dr. C. S. Case: I have had no experience whatever in the surgical method of moving teeth, and so far as I know, the method may be very commendable where it can be used. As Dr. Carpenter has said, and with which I agree, I like to see the young men come forward and express their ideas. It is by the influence and work of the young blood in the profession that we make progress more than we do by following the stereotyped ideas of the older men.

There were one or two thoughts that suggested themselves to me while I was listening to the paper that were expressed very well by Dr. Goslee. One thing, however, he omitted to emphasize, that is, the difference between this operation and the operation that was suggested by Dr. Cunningham, of England, and also by Dr. Bryan, of Switzerland, a number of years ago, in a paper which was published in The Dental Review. I believe he spanned the malposed tooth with a steel bridge and then forced it out in a similar manner with a large pair of pliers. The difference between

that operation and the one suggested by Dr. James is considerable, the latter cutting the process at the side, so that the whole process surrounding the tooth is forced forward with the tooth. In some instances that might be done, but I can imagine cases where it would not answer. If there is necessity for considerable movement of a tooth it would carry the process forward in such a way as to produce considerable irritation, inflammation and suffering from the absorption of process that must ensue. Then, the operation has but a very limited sphere, being applicable in those cases only where a slight movement of the tooth would place it in its proper position. It is only in such cases that this operation would be applicable, and in such cases it would seem to me far more advisable to move the tooth by the orthopedic application of force. Still I can understand how this method might be undertaken in some cases where more rapid work is required. I do not wish to be understood as casting discredit on the method or of discouraging any one from trying it. It is only in its stage of development. We may arrive at a time where many cases may be regulated in this way far more preferably than by the older methods.

Dr. G. V. Black: Possibly I am at fault, but I do not think I caught fully the method employed by the essayist or the precise manner of the cutting. I would like to ask Dr. James if in moving a tooth from the lingual to the labial by his method, if he cuts only upon the labial side?

Dr. James: I cut medio-distally as far toward the root as possible, not lingually.

Dr. Black: Do you carry the tooth away from the lingual portion of the socket?

Dr. James: Yes, sir. I carry the labial process with it, not the lingual.

Dr. Black: I have asked these questions to bring a point prominently before you. It struck me that perhaps I did not understand the point the doctor tried to make, but it seems I did. The lingual portion of the process is not disturbed, but the root of the tooth is torn away from the lingual portion; then he expects a new peridental membrane to form. The peridental membrane is disrupted, is it not?

Dr. James: Yes.

Dr. Black: I would like to ask the doctor to say something in his closing remarks as to his observations with reference to th

restoration of the lingual portion of the peridental membrane. Here we have a tooth in lingual occlusion the full breadth of the tooth, the labial portion of the tooth being about where the lingual portion should be. Then you would by this movement leave a space between that tooth and its lingual alveolus nearly the breadth of the tooth. The question I wish to ask is as to the healing of that space, whether it takes place quickly without suppuration, and whether the peridental membrane is perfectly restored. It would seem to me that this is a point of difficulty; if suppuration occurs in that space it will defeat our object, for we would have a tooth with an imperfect peridental membrane. I do not know; only repeated observations will make us safe and sound upon such a question as that.

I would like also to ask Dr. James whether he has made observations of this method of regulating with the lower as well as the upper teeth. There is a difference in the position of the apices of the lower teeth and of the upper teeth with reference to the labial plates of bone. The apices of the upper teeth lie close normally to the labial plate, while the apices of the lower teeth do not do so, but are closer to the lingual plate. As to whether we can apply this method to the lower teeth as well as we can to the upper six anterior teeth will be a question, and it will become a question whether or not it can be applied to the bicuspid teeth as well.

I will say, while I am on the floor, that after reading the paper that has been referred to in the transactions of the World's Columbian Dental Congress, I had quite a number of regulating cases to deal with in my practice, and I looked for some method, surgical or otherwise, to move teeth quickly into place. But there seemed always to be something in the way, some reason why I should not do so. In those cases where there is a tooth out of position, a lingual occlusion, if the patient be young it is only a matter of a few days to move it in place. A tooth caught in lingual occlusion may be moved into position within three or four days and need be held there only for a few weeks perhaps. I have no doubt that this method is applicable to many of those cases where the patients require rapid moving of the teeth. We have patients who would bear a surgical operation, but who would complain bitterly of wearing any appliance in the mouth for several weeks, and in such cases we may be justified in resorting to such an operation as this, provided experience assures us that we are not endangering a

portion of the peridental membrane, or endangering the vitality of the tooth. The more I see of cases in practice, the more I dislike to destroy the vitality of a tooth, and I will not do so if I can avoid it; and if this operation proves dangerous to the vitality of a tooth, I should certainly not wish to employ it. If, however, abundant experience shows that the operation is not dangerous to the vitality of a tooth, it removes a serious objection to it. Take the case of teeth that have been moved by a blow by accident in comparison. I should suppose that this operation would be quite as dangerous to their vitality. In most of the cases where a tooth has been moved considerably, the alveolus broken loose, the pulp dies—vitality is lost. This operation in some instances would be a severe shock to a tooth pulp, and I question very much whether it will not really endanger the vitality of the tooth. The care necessary in these operations is very considerable, and they should not be undertaken lightly. We may do harm before we know it. Even the handling of a saw, as Dr. James says, is an operation that should be carried out delicately and perfectly, but it is a procedure that is quite dangerous in itself; it requires a steady hand and careful work to make the cut as he directs with the saw without endangering the adjacent tissue, and I warn every gentleman who undertakes this method for the first time to proceed with great care.

Dr. A. B. FREEMAN: What would you do in case you could not bring sufficient force to move a tooth? Would it be worth while to undertake this method?

Dr. BLACK: I have seen some cases where I seemed to fail with all the force I could apply in cases somewhat similar. I undertook to rotate a cuspid once, and it was impossible. I moved three or four molars with long springs reaching back to the posterior part of the mouth, applied directly to the cuspid, and it would not move. But after resting for some time, the tooth was moved. There is something about that which is quite curious to me. Several times in my professional career I have found teeth that were stubborn to move; I could not get any anchorage that would move them, yet at another time they would move and apparently by the same means. There is something in the conditions present that hinders or favors movement of teeth at particular times, and I imagine in this case there was some condition that was changed and whether the bone around the tooth was the thing at fault, I do not know. It seems to me, however, there was more bone remove

than I should have thought safe to remove. I should have removed the bone perhaps to the gingival line and then tried to move the tooth. I remember one central incisor lying under the labial plate, the apex of the root a considerable distance from the proper position; it was lying horizontally. I cut down, drilled into the crown, put in a little gold screw, and by that means I got hold of the tooth and began to drag it. It was slow dragging for some months; finally it moved until it got into a fair position, moving a considerable distance, and the man had a live pulp after all was done. So we may by patience do a whole lot of things that are seemingly impossible. By violence we may do much harm, and do it quickly; So I feel like proceeding very cautiously with the regulation of teeth, and I would not cut so much in moving a tooth unless it was demonstrated by some one whose experience and skill along this line were sufficient to point out just what we can do. After it has been thoroughly demonstrated that this operation is safe to the vitality of the tooth and peridental membrane, it may be employed, but I should go slowly until satisfied it is safe.

Dr. C. S. CASE: I desire to correct one thing I said in my previous remarks, as I misunderstood the paper. I did not understand it was cutting through the labial plate; I supposed the object of the operation was to cut between the teeth and saw through and across transversely the arch, then grasp the portion of the process, carry the whole surrounding alveolar process with the tooth forward. I do not know but what I would prefer that operation to the other in those cases where there was sufficient space between the teeth, and the saw could be safely used without running on to the roots of the adjacent teeth to injure the peridental membrane. If the saw could be carried across the arch down between the two alveoli on either side and then the whole piece containing the tooth grasped and forced forward, I do not know but that operation would be preferable to the other.

In regard to the difficulty of moving teeth, many dentists say that they come across certain teeth which are impossible to move. Perhaps I see as many cases of irregularity as most of you, but I must say that teeth that are impossible to move do not come into my practice. What does come into my practice, however, are many teeth that I attempt to move in a certain way and fail to do so, because I either do not apply sufficient force to the teeth, or because I do not apply it properly so as to get the greatest advan-

tage of the power exerted. If I fail in one method I remove the appliance and apply one that will exert a stronger force. I have had cases where it seemed to be impossible to rotate a tooth with any of the ordinary means, but that was no reason to say that it was impossible with some one of the other methods I have introduced where a positive force can be applied, under the influence of which a tooth cannot help but move, I do not care if the root is crooked at right angles.

Dr. J. N. McDowell: In reviewing the history of this subject it seems that Tomes was among the first to give an authentic report of the heroic movement of the teeth, a method which other operators have used—Bryan, of Switzerland—and Mr. Tomes seems to have recognized the possibility of constriction causing the death of the peridental membrane. Following this idea up, Dr. Bryan, of Switzerland, performed the operation which has been described to you this evening, as you will see by referring to his paper in the Dental Review for 1892. He cuts through the bone with a circular saw, so that if the tooth is too far inward, by cutting through the process and moving it forward it would naturally move too much forward; it would stick out beyond the normal alveolus of the arch. To facilitate matters he would cut down with a bur between the outer process and the tooth and with forceps bend the tooth forward. In sixteen cases which he reports there were two in which suppuration occurred, and he seems to have recognized the fact that if the tooth was too far in there was danger of death to the peridental membrane, because he made the statement that he would not attempt to move a tooth that was too far in.

Dr. Cunningham, of England, seems to have devoted his attention to heroic regulating. For instance, if a bicuspid was intraocclusal, inside the line of occlusion lingually, he would extract the first molar, and put a bicuspid in the mesial root of the first molar, thereby straightening the arch in that manner. He did not use the method of cutting so much as did Dr. Bryan, of Switzerland. It seems that Tomes only performed those operations where the tooth was simply inside the line of occlusion. There is this fact to be noted, that if the tooth is just inside the line of occlusion it is a very simple and easy matter to move it outward with a jackscrew; it is merely a bending process. Mr. Tomes did not cut away the process, but bent it out with the forceps, so that there was no destruction of the peridental membrane. I consid

t a serious operation to cut away the process, or to make two ncisions on each side of the tooth, and then move it forward, ecause I have tried the method myself, and the first tooth I moved orward, after three years, suppuration took place, and I assure ou that I shall treat such cases with a good deal of caution in the uture. If we tear or injure the peridental membrane, which we re liable to do by the method described, sooner or later some pathological condition will take place.

Dr. Woolley: You mean there was suppuration in the way of an abscess or pyorrhœa?

Dr. McDowell: The patient came to me the other day and it seems as if suppuration had taken place about the neck of the tooth. I have watched the case carefully for three years, and have kept a perfect record of the case.

Dr. Woolley: May not the suppuration have been due to a dead pulp?

Dr. McDowell: It may have been.

Dr. Bentley: Might it not have been due to osteomyelitis?

Dr. McDowell: I do not think so. The tooth was not moved ar enough forward to cause the death of the pulp; at the same ime, if the pulp had been dead I should have probably heard of it r known of it before the lapse of three years. This is only a sup- osition, and what really occurred I do not definitely know now.

Dr. Freeman: Did you make a test to determine whether he pulp was alive or dead?

Dr. McDowell: I did not. It seems to me, when we have eth to move and they are just simply in the line of occlusion, it is tter to remove them with a jackscrew than to attempt such an eroic operation as has been described.

Dr. C. P. Pruyn: With the other members, I want to add a ord of commendation to the paper and to encourage our young en in the line of work that has been undertaken by Dr. James. wish to speak of a personal observation in the case mentioned Dr. Freeman. I saw the case before he operated on it, and ter. The operation was successful and undoubtedly the proper e to perform. For three months he had tried to move the tooth thout success; he then anæsthetized the gum, removed a rtion of the outer plate of the alveolus, and the tooth has anged its position as you will see from the casts. There has en restoration of the alveolus and of the gum tissue, and every- ing has assumed a normal appearance.

There is another method of immediate regulation, which was recommended by a gentleman in Indiana some ten or twelve years ago, if I remember rightly, and it looked at that time as though it might be worth something.

Dr. Reid: It was Dr. J. B. Morrison, of Indianapolis, who read a paper on immediate regulation at a meeting of our State Dental Society in 1884.

Dr. Pruyn (resuming): A case in which the tooth is lying outside of the arch is differentiated from one in which this particular method would be applicable. Dr. Morrison took a steel pen, reversed it in the penholder, sharpened it a little, then with this instrument he took out a U shaped piece of the gum and the alveolus and the bone directly underneath the root lingually, then it was an easy matter to drop the tooth in position. He said he had performed this operation many times successfully. I have never done it, but at the time he presented this method it seemed as though it might be a feasible operation.

Dr. Bentley: I should like to ask the essayist if he has ever successfully rotated the anterior teeth by the process described? I would like to ask him whether it is not Dr. Cunningham's custom to cut the alveolus both labially and lingually in performing these operations instead of simply labially?

Dr. James (closing the discussion): My idea in performing this operation is in cases where the age and temperament of the patient will not permit of wearing appliances. The case mentioned in my paper was that of a child, eight years of age, at the time the two teeth were moved; they were locked inside the lower arch. The child was so nervous that she could not wear an appliance, and to do so the parents would have had to take her out of school, and so this idea was given up. I moved these teeth on the 18th day of December, 1897, and you see there is plenty of room for the teeth to come into position. The cuspid is coming down nicely. The child is now between ten and eleven years of age. It has allowed the arch to expand naturally, and we have almost perfect articulation. It would be impossible to have regulated those teeth at that time by any appliance, on account of the child's health. I removed the retaining appliance on the 27th of December. The soft tissue had united very nicely, and there was healing by first intention. I have not had suppuration follow in any case and I have seen all of them a considerable time after the teeth were moved by the

method. I tested every case to determine whether or not the pulp is alive, and it was in a perfectly normal condition so far as I could determine.

If I had the skill of Dr. Case in moving teeth by mechanical appliances, I would not use the method I have described.

With reference to curing pyorrhœa, I do not mean to say that the operation itself cures pyorrhœa, but I removed all of the deposit before operating, and got the pyorrhœa as nearly cured as I could. Since the operation the pyorrhœa has disappeared. I have destroyed but one pulp, and this was a case a cast of which I have passed around. I regulated the teeth under one administration of nitrous oxide gas, made an incision with saw and moved the two teeth. I have operated many times with local anæsthesia, and there is no more pain inflicted than in a case of ordinary extraction.

So far as rotating teeth is concerned I recall one case when a lateral incisor sat back of the central and to move the tooth into line it had to be slightly rotated to get it past or around the disto-lingual angle of the central incisor.

With reference to not giving credit for this operation, I have not claimed in my paper in any sense whatever to be the originator of it. I saw Dr. Cunningham perform the operation in 1893. Dr. Bryan has also operated in the same manner. Those of you who have read the article of Dr. Cunningham's will see that he gives due credit to every one.

The Odontographic Society of Chicago.

A regular meeting was held March 20, 1899, the President, Dr. H. J. Goslee, in the chair.

Dr. J. N. McDowell read a paper entitled, "Facial Art in Orthodontia."

The discussion was opened by Dr. C. S. Case, who said: *Mr. President and Gentlemen of the Odontographic Society of Chicago:* Dr. McDowell certainly deserves a great deal of credit for the manner in which he has presented his ideas to this society, and also for his disposition to reach beyond the confines of pushing or pulling the crowns of teeth to a more perfect occlusion, to that higher realm of facial art. Orthopedic dentistry possesses great possibilities along this line. This special department of the work lies at the very foundation of a successful and advanced practice. It is through an intimate knowledge of facial and dental æsthetics,

and the ability to recognize and classify the various forms of facial imperfections and deformities that are produced by malpositions of the teeth and jaws, and that may be corrected by force judiciously exerted upon the teeth, that we really hold the key to correct treatment. Then in the treatment itself, as Dr. McDowell has suggested, perhaps, in better words than I can express, we are molding, correcting, changing and beautifying living forms. Instead of the tools of the sculptor, we are using mechanical and artificial forces, and for the paint of the artist we at times are using the very blood itself which we cause to tingle with increased health and beauty the cheeks of our patients.

In regard to the paper itself, if Dr. McDowell will pardon me, I would suggest that before it is published he go over parts of it and eliminate certain misleading terms in nomenclature and phraseology which will often creep in through the hurry of getting the matter together.

Relative to the ideas which he has advanced, and which purport to stand as guides to correct treatment for the correction of irregularities of the teeth and imperfections and deformities of the face, I must say that in my practice I work along almost entirely different lines, with an endeavor to attain, and with results that show that I do attain, a fair degree of success. I was surprised at some portions of his paper, and I will take the liberty to read a single paragraph: "The more advanced we become in this art of changing or modifying the features, the more necessary it becomes to have fixed principles to follow and adhere to." There cannot be anything truer than that. But the doctor follows it with this: "No special attention has been given for an outline or a systematized form of the marked deformities of the facial aspect, founded upon the science of occlusion and modified forms of malocclusion and yet every change in the contour of the face as the result of malocclusion of the teeth, or changed position of the lower maxillary, bear and reflect upon each other. Every individual will express himself in an uncertain way of the beauty or disfigurement only as it appeals to him. Without classification or stipulated form, a correct understanding will never satisfactorily exist in dealing or speaking of the conditions of the facial outline." In reading that paragraph I wondered if Dr. McDowell had carefully perused a certain chapter in the "American Text-Book of Operative Dentistry." If he had, I wondered if it was possible that

had so egregiously failed in my endeavor to give something like a systematic scheme by which a correct knowledge of the relations and malpositions of the teeth and jaws could be gained only by a proper comparison to certain features of the face. I started out in that description with a study of that which it is possible for us to accomplish by a scientific application of force to the teeth, and I have found by experience that we can do certain things. We can change the position of the features of the face over a certain area by a bodily movement of the teeth not only, but by a movement also of the immediate surrounding framework of bone upon which certain features depend for their shape and contour. So I called that the "changeable area" of the face in contradistinction to the unchangeable portion of that part of the face which it is impossible for us as dentists to change.

A line commencing just above the end of the nose and passing downward on either side of the face, enclosing the naso-labial depressions, the lips and the chin, is about the area that it is possible for us to change by the movement of the teeth and jaws. In this changeable area I have found that certain parts of it can be changed in their relations to each other, that is, the upper part of the upper lip and the end of the nose can be changed by moving the roots of the upper front teeth and the bones in which the roots are imbedded, forward or backward, without moving the lower part. The lower part of the upper lip can be changed in its relation to the upper part and also in its relations to other features by moving the crowns without changing the position of the roots. In like manner the lower lip can be changed in its relations to the other parts and to the chin. It will be observed that there were four distinct segments to this changeable area that can be changed in their relations to each other, as well as in their relations to the unchangeable area of the face. This is followed by a study of how to classify the features of different physiognomies from an artistic standpoint, based upon that which we can hope to attain in the vast variety of conditions presented. By comparing certain prominences of the changeable area as, for instance, the malar prominences, the forehead and the bridge of the nose, as prominent features of the unchangeable area, to the position of the chin, and drawing relations by careful study, is in my estimation the only reasonable and scientific method that will enable us to determine whether there is

a depression or a protrusion of the middle features of the face or the chin, or if there is a protrusion or retrusion of one or more segments of the changeable area. The plan outlined by Dr. McDowell, while seemingly ingenious, is exceedingly inadequate and in some particulars imperfect, especially that of the "facial line" that he speaks of. For instance, there are a number of varieties of protrusion and retrusion that he has not mentioned, and for which it would be impossible to determine the exact treatment by his "facial line." I can show models of three cases, of which it would be impossible for one to determine that they required different treatment either by the occlusion of the teeth, the relations of the upper and lower teeth to each other, or by the so-called "facial line." They all look to be protruded teeth ; but every one of these required different treatment. In one the lower was retruded, in the other the upper was protruded. In another, the incisal portion of the teeth was protruded and the roots were retruded ; still they looked very much alike. That brings us to the part of the paper which Dr. McDowell lays so much stress upon as a fundamental principle. This fundamental principle—occlusion—we must clearly understand in order to be able to correct irregularities of the teeth. Occlusion, I presume, has reference to the closure of the upper and lower teeth upon each other. We have a great variety of conditions in which all of the teeth posterior to the cuspids have really a normal occlusion, and yet they are exceedingly irregular ; that is, the anterior teeth are exceedingly irregular in their relations to each other. Again it is quite impossible in many instances to determine by occlusion whether we have a protruded lower jaw or a retruded upper, and vice versa. In my practice and study of faces I have come to understand that the *effect* is very misleading; that in reality a large proportion of those cases which are supposed to be protruded or retruded lower jaws, the chins and lower jaws are in proper relation to the unchangeable features of the face, and the effect is due entirely to a protrusion or retrusion of the middle features of the face and the bones in which the teeth are embedded. The facial angle or the "angle line," as Dr. McDowell has called it, was first brought forward by a Dutch artist, by the name of Kemper, somewhere in the middle of the eighteenth century. His idea was that the greater the prominence of the features of the physiognomy the less prominent the forehead. His idea in bring ing out the facial angle was to give artists some guide by which

they could draw faces of different races and of animals. Of course, in arriving at a facial angle we must have a base line also, that is absolutely stable in its relations to the cranium, in order to measure the degrees of the angle. A single line is not an angle any more than a square can be round; it has got to have a proper base. Kemper made the base of his angle an imaginary or real line, extending from the external auditory meatus to the anterior portion of the orifice of the nose, then from that the upright line was dropped, resting against the most prominent part of the forehead and upon the upper teeth. Those two lines diverging formed an angle, and this is what is meant by the facial angle. A French artist invented the goniometer, which is used to-day for determining the facial angle. The base of his facial angle extended along occlusal surfaces of the upper teeth to the external opening of the ear with the upright line in the same position as Kemper's. It was found by Kemper that the facial angle in the highest type of the normal white race was about eighty degrees; anything that was above that or anything that approached more nearly to a right angle or ninety degrees was toward the antique and therefore untrue to nature, yet from that artists often drew their relations and really made the facial angle greater than it was possible. Less than that it run into the Mongol race and the negroes, down to seventy to sixty degrees into the animals. The higher type of the anthropoid apes was something like thirty-five to forty degrees. Twenty-five degrees was a Newfoundland dog, and so on. I speak of this to show that the facial angle was invented and has been used merely as a means by which artists could more perfectly delineate the individualities of certain types of man and animals in drawing or painting them. I should not think it would be a very great help to me, and certainly not if I was to use merely a line dropped down in front of the face; but I do not wish to criticise the effort that has been made by Dr. McDowell, nor to discourage others from adopting it. His paper in many particulars is certainly very commendable.

Dr. McDowell (closing the discussion): I wish to thank Dr. Case for his remarks on my paper, and what I have to say is not only in defense of same, but also for the dental profession at large. All professions are not prone to accept anything that is given to them as being the truth, and it would be folly to present a paper founded purely on theory and expect it to be accepted as

facts. Science accepts only that which is based on established and proven facts.

Dr. Case spoke of the work he has given in one of the text-books. He also speaks of the changeable area and classification, which in my estimation is theoretical because it is not based upon fact. We must have something substantial from which to work. I think failure arises in this respect because Dr. Case has paid very little attention to occlusion. He has acknowledged that in his work and in his classification. It seems to me, he has ignored the science of occlusion. The system I have given you to-night is based upon occlusion and the changed and touching points of the facial angle, and in this respect the normal facial angle or normal facial line is the keynote to the changed position of the facial outline. I believe Dr. Case stated that in cases of protrusion of the upper teeth he was unable to say what class they belonged to by measuring the facial angle.

Dr. CASE: I did not say that I was unable to state what class they belonged to.

Dr. MCDOWELL: I must have misunderstood you, then.

Dr. CASE: I have a definite outline of all classes.

Dr. MCDOWELL: The outline is made by the degree of the facial angle. If the degree of the facial angle is changed at certain points, it designates accurately to what class the case belongs.

What I have given you this evening is not a theory of the features of the face, but it is based on facts of facial measurement as perfect as science with her appliances and photography can make it at the present day. As the architect considers the shape or design of a house, so we should consider the architecture of the face, and we should know to a certainty where the inharmonious points exist. Art in dentistry is advancing more rapidly year by by year. It is only a matter of time when every dentist will have a high appreciation of this subject and will promote the art of classifying and beautifying the facial outline and expression.

INCIDENTS OF OFFICE PRACTICE.

Under this head Dr. E. J. Perry reported the following interesting cases:

I have an antrum case to report which has been of great interest to me. I do not claim any special credit for anything I have done in the case, nor do I relate it because of any results which

ıave obtained in its treatment. But the case is so interesting that I consider it worth while to present it so as to prevent similar ıistakes on the part of dentists in the future. About three years ıgo the husband of this patient came to my office to make an appointment for his wife. I had not seen her, but he stated when he ıade the appointment for her that she had been undergoing treatıent for some trouble connected with the antrum by a specialist of ıote for the past nine months. The man had paid a large sum of ıoney for the treatment, and still his wife was no better. I thought I would go to the specialist and ask him if I would be interfering vith his work by the operations contemplated on her teeth. This vas before I saw the woman. He very politely told me that he did ıot think I would be interfering in so doing, and I undertook to ısk him the nature and origin of the antral trouble. I also asked ıim if there were any pulpless teeth on that side of the mouth, .nd he felt that I was getting a little too inquisitive and flared up, ısserting with great vehemence that no pulpless teeth were in her ıouth. That is the way the matter ended, but I said to him hat when the woman came to my office I would look for pulpless eeth. She came to my office one afternoon and with the aid of he electric light I discovered that a cuspid was pulpless; I took large gold filling out of it, and she told me of the dentist who .ad filled the root with gutta-percha. There was no pericementıtis. I got under the lateral incisor and with the proper refraction f light found it pulpless. The tooth was not decayed; I entered he pulp chamber, which I found septic. The pus had burrowed ıto the antrum, and this put the specialist in a hole as regards ıy pulpless tooth being on that side of the mouth. I extracted ıe lateral incisor and took the woman to Dr. Brophy, who had ıther advised against the extraction of the tooth. But the woman ıd suffered so much and was in such a bad physical condition enerally that something had to be done. As I say, we extracted ıe tooth. We then entered the antrum through the same hole enlarging it) through which the specialist had been treating so ong, and found a handful of antiseptic gauze, which had been ushed in there for some reason or other and left. After having emoved it we naturally supposed we had gotten out all of the old ınk that had been crowded in there. We treated the case antieptically for a year; the case did not get well. The removal of he antiseptic gauze relieved the acute symptoms somewhat. If

you could only have heard this woman give her story of the pain she suffered and anguish of mind, you would have been melted with pity. I asked her at the time if a tube or plug had been used, and she said that there had been used a tube. This was the time Dr. Brophy operated upon the antrum. She had lost the tube, and said she could not find it. I thought it might be mixed up with the antiseptic gauze in the antrum. After treating the case antiseptically, keeping it clean with the expectation that nature would do the rest, the woman went to Minneapolis either to visit or to stay a year. While there she was seized with severe pain, some change had taken place in the antrum. She went to a conscientious dentist there, a very careful man, by the name of Peck. He enlarged the antral opening, treated the antrum with peroxide of hydrogen and antiseptics. I use peroxide of hydrogen simply as a scavenger, not as an antiseptic. He obtained no permanent results, and the woman still continued to suffer. Finally she was taken to the University of Minnesota, and Dr. Hendricks, a very skillful, scientific surgeon, placed her under the X rays. The X rays revealed the presence of a tube in the antrum which the accomplished specialist had permitted to be lost in there. After determining the location of the tube, she was placed under the influence of chloroform, and Dr. Hendricks operated and for some reason or other did not get the tube. They extracted both bicuspids. The opening which the specialist had made was back of the canine fossa just posterior to the root of the second bicuspid Dr. Brophy enlarged the same opening; while Dr. Hendricks in extracting both bicuspids also made a very large opening there Strange to say, he could not get the tube. She was relieved for the time being, and then last spring came to me again, having returned to the city. She said she had lost the plug which she had had in this opening, and desired me to make another. At this time she told me all about what had been done in Minneapolis. immediately told her that it would be necessary to place her under chloroform to take the tube out. She said it would be impossible for her to take chloroform again, that the surgeon said he almost despaired of her life at the time she took the anæsthetic, and declared it to be unsafe to attempt it. "Well," I said, "we will do it without chloroform." Naturally the hole had filled with cicatricial tissue, not bone. I enlarged the opening by making a bigger plug each day or so of gutta-percha, and when she came to my office

ach day I pressed the gutta-percha together, made it a little arger, and drove the plug in a little tighter. Any great amount of pressure at one time would throw her into spasms; it would ause great pain and she was unable to stand it. I gradually nlarged the opening until I could introduce a fairly good ized instrument, say as large as twice the size of a lead pencil. managed to remove one or two small pieces of the tube that had roken away, was oxidized, and came away with the peroxide of ydrogen, which we carefully saved and had sent back to Dr. endricks. These pieces were analyzed and found to be com- osed of copper and zinc, showing that the specialist had used a erman silver tube, and without a flange upon it to prevent it rom slipping in. I made up my mind that the tube was probably xidized and partly encysted in the connective tissue there, and I vas going to break it up by some means. So I told her the next lay she came to my office I would use peroxide of hydrogen, and wanted to see how much pus had accumulated over night. She ame to my office, I removed the plug, took my Dunn syringe, oaded it with peroxide of hydrogen, fresh and pure, and injected t in there, closed the opening with my finger, and it simply made he pus boil. The woman went up in the air, but it was this agent hat dislodged pieces of this tube, because the boiling of the pus vithin the antrum was so violent. Then I washed the cavity out vith antiseptics, and it has now been six weeks without any pus vhatever. The hole was so large that I could take a curved nstrument, wrap cotton around it, and touch every surface of the ntrum. I could touch and feel it as carefully as I could with my ttle finger if I could get it in there, so large was the opening, and he lining of the antrum is perfectly normal; there is now no pus; he tube had become oxidized and came away piece after piece, eing dislodged by the violence of the boiling of the peroxide of ydrogen.

I relate this case as a matter of some interest, because of the act that some dentist might make a similar mistake and push the ube too far into the antrum through carelessness or incompetency. t the time Dr. Brophy operated on the case he had no idea that here was any more old junk in the antrum, or the case would have een cured at that time. Virtually this tube cost the husband 3,000, and the patient about four years of great suffering almost o the point of death.

I wish to relate another case I dismissed last Monday morning as cured. I will mention the treatment. The case was operated on surgically twice, once by myself. I have treated it antiseptically for six or eight weeks by injections of peroxide of hydrogen, followed with listerine, glyco-thymoline and borolyptol. I made up my mind that it was necessary to use agents that were powerful and would do business. I have not the time to go into details. However, pus had been escaping through an opening which the previous operator had made for four years. I had extracted the last pulpless tooth on that side of the mouth, drilled through, curetted the cavity, and removed some dead bone. About four weeks ago I injected with the Dunn syringe pure aromatic sulphuric acid. I repeated this at the end of a week, and then again at the end of another week. Last Monday I discharged the patient as cured, there not having been any issuance of pus for four or five weeks. You will remember that the use of pure aromatic sulphuric acid was the old-fashioned treatment of Dr. Garretson. It is a stimulant and antiseptic. The use of peroxide of hydrogen in old, sluggish, chronic conditions in my hands does not effect a cure. We have got to use some agent that is effective from the start, such as the aromatic sulphuric acid.

Dr. GOSLEE: Was there any pain following the injection of the pure aromatic sulphuric acid?

Dr. PERRY: The pain was not so severe but that the patient could stand it. I permitted it to remain about ten minutes, then washed it out.

ODONTOGRAPHIC SOCIETY OF CHICAGO, APRIL, 1899.

DISCUSSION OF DR. GILMER'S PAPER.

Dr. E. D. SWAIN: *Mr. President:* My apology for being here to-night to open this discussion must be that I was not only complimented by Dr. Gilmer in the selection but that I was advertised to be present at this meeting of the Odontographic Society. I do not believe I can say anything to enlighten you after the paper you have listened to, the illustrations upon the curtain and the remarks of Dr. Gilmer and Dr. Noyes. It is true that in 1875 I was chairman of the histological section of the American Dental Association and was fortunate enough to find something, accidentally, on of which I could make a report. A young lady, perhaps twenty-three or twenty-four years old, presented herself at my office with

missing cuspid. Her desire was to have the defect remedied by tooth upon a plate. I observed that the jaw presented somewhat of an abnormal appearance. It was very full over the vicinity of where the cuspid should be, extending perhaps to the lateral incisor anteriorly and to the first bicuspid posteriorly. I learned that two or three years before a cuspid had been extracted. She insisted that she could produce the tooth, that it had all been removed. Still I had my doubts. I had made up my mind that either the permanent cuspid was present in the jaw, not erupted, or that the crown had been broken off and the root remained there. In those days we had no X rays and skiagraphs by which to diagnose cases of this kind, and if we had had them I do not know that I should have been sufficiently up in oral surgery to have brought them into use. I dismissed the young lady, asking her to return. She came back in a day or two and brought with her a cuspid tooth, crown and root intact, but still I doubted. I thought for some reason she was mistaken. So I made a circular incision large enough so that I thought that I could introduce alveolar forceps and get outside of what I expected to find, the root or the permanent cuspid, and extract it. When pressure was applied to my great surprise there was very little resistance and the blades of the forceps went together easily, but in removing them from the mouth I observed that they were filled with two or three shining objects, which I thought best to investigate. I found that they were very small teeth, a little longer than a grain of wheat, perhaps, but not larger except in one instance, and that was a well developed bicuspid. There were fifteen cuspids, and as I stated in my report, they were perfectly formed teeth, of good proportion with well developed normal dentine and cementum, as the pictures on the screen have demonstrated.

In my report I thought I ought to enlighten the members of the American Association as to how this thing occurred, and I advanced a theory somewhat similar to that which has been stated to-night, though in a little different language. I advanced the theory that by some accident at some time in a very early stage of the life of the individual the follicle had become broken up. In the discussion of the paper I was so severely sat down upon by Dr. Atkinson that it is still a very vivid memory. Although I still believe, as Dr. Gilmer has stated, that the breaking up of the cord or the follicle in some manner or other is responsible for the devel-

opment of a great number of small teeth, there is not enough fecundity or vitality left in the parts of the mother cell to produce a normal tooth.

The treatment of this case was simple. After discovering what I had in my forceps I explored and took the remaining teeth from the cavity and washed it out thoroughly, simply treating it with a ten per cent solution of carbolic acid. It healed very rapidly, and some three months later I inserted a plate with one tooth. There was considerable wasting which I attributed to my cutting out the parts, but as I understand now it was probably from the healing of the cyst and the settling away of the tissues owing to its removal.

Dr. Gilmer has complimented the pictures which were produced at that time. They were the work of a young man of great promise in this city, who received an appointment of pathologist at the Asylum in Elgin. And it would seem almost to prove the theory sometimes advanced that men die from the diseases which they are most interested in, from the fact that the first year there he gave his whole attention to the study of the brain in its abnormal conditions. While from a good family and his brothers and sisters are living and healthy to-day, and he gave as good promise as the rest of them at that time, twenty-five years ago, he died of brain trouble.

I wish to compliment Dr. Noyes on the production of the photographs he has exhibited to-night. It is another evidence of the advance our young members are making in this profession, and I think it should be encouraged by every possible means.

Dr. J. S. MARSHALL: I have been very much interested to-night in listening to this paper and seeing the pictures that were thrown upon the screen, but I do not know that I can add anything to what has been said as the ground has been thoroughly covered. Dr. Gilmer has given us the generally accepted views as to the pathology of these tumors, which I believe are correct, and he has mentioned some of the cases that are most prominent in our records with regard to this sort of trouble. There is one, however, the most remarkable in history, which he did not mention, that reported by a German surgeon, O. Hildebrand, of Göttingen, where 350 to 400 of these small teeth or denticles were found. A brief report can be found in Marshall's "Injuries and Surgical Diseases of the Face, Mouth and Jaws," page 668. But with the exception I think he has reported the largest number that has been taken from any one cyst.

I have reported some of these cases and the one which interested me most was the first one I reported, because it was the most remarkable. Remarkable from the fact that the cyst originated from a misplaced and inverted third molar of the lower jaw. It was so highly placed in the ramus that when the cyst formed it cut off the coronoid process and also the articulation of the jaw, producing necrosis in the condyle, so that when the cyst was opened and explored a loose fragment removed from the cyst was found to be the articulation of the jaw. This case I reported in 1882. Strange to say there was perfect reproduction of the bone and perfect mobility of the jaw upon that side. I attribute this to the fact that in all probability the secretion of the cyst had dissected up the periosteum from this portion of the bone and caused it to necrose, the periosteum being left intact and after the necrosed portion was removed new bone formed from the periosteum. I had one other case somewhat like it, I think in 1885, in a little boy, from whom I removed the entire ramus on right side and in which there was reproduction and perfect mobility. Dr. Palmer has just called my attention to another case of dentigerous cyst I had at Mercy Hospital some years ago in which I removed seven rather well formed teeth from the upper jaw on the left side, after having extracted the third molar, and I felt at that time, as I feel now, that that particular kind of cyst is explained on the theory of the breaking up of the epithelial cord into globules and these coming down and settling on the connective tissue beneath stimulate the growth of the papillæ, and thus these teeth are formed.

Dr. T. W. Brophy: I have been very highly pleased by the paper of Dr. Gilmer and with the illustrations. It is interesting from the standpoint of pathology. The question of the development of these cysts is one that I am always interested in. It is a well-known fact that dermoid cysts are the centers of tooth development oftentimes. I remember distinctly that the late Professor W. H. Byford once had in his possession a cyst which he had removed containing something like 400 teeth of different forms and in different stages of development. I had the good fortune to get from him at one time a cyst containing fifteen or twenty teeth, but unfortunately it was placed on exhibition and never returned. From the cyst containing the 400 he gave me as many as I desired of the different kinds of teeth, and those also disappeared after I had had them awhile.

In his paper Dr. Gilmer has confined himself to a description of the cases and the manner of removal, etc., but I would like to speak particularly about one essential feature of the operation of removing these cysts, that is, to be sure and remove all of the cystic wall, else we will have there a nucleus for the development of a still greater quantity of fluid. While we may remove the teeth or tooth which is the nucleus of the cyst, we will not have removed the possibility of a recurrence should we remove all of the teeth and allow the cystic wall to remain. In these dentigerous cysts the wall is frequently composed of mucous membrane or epithelium, and should this wall remain it will be certain to develop another cyst, a quantity of fluid will be generated and the operation will have to be performed again. If the wall should be fibrous the same reason exists why it should be thoroughly removed, and it is far better to remove it by instruments than to depend upon escharotics. Thoroughly curette the walls and see to it that the parts are stimulated and granulations encouraged, and we may have the cavities filled in course of time. If, however, a large cavity involving the antrum of Highmore is included within the cyst we would hardly expect it to be filled; we must care for it the same as for antral disease under other conditions.

I have here a tooth which I removed from a dentigerous cyst no long ago. While it has no special bearing on Dr. Gilmer's paper it is unique and I am sure he will be glad to see it. I have never seen its counterpart. It seems to be a tooth within a tooth. It was in the place which should have been occupied by the cuspid tooth. The cuspid never developed. It was situated high up forming a cyst in the bone and crowding back the membrane forming the wall of the antrum.

I do not know that I have anything further to say except to express my thanks to the gentlemen who have taken part in this meeting, the presentation of the paper by Dr. Gilmer, the slides by Dr. Noyes and the remarks of Dr. Swain and Dr. Marshall. I wish to say that I appreciate them all; I appreciate them because they bring to this society a kind of work I think we ought to encourage. It is a matter of great satisfaction to us all to feel that we are getting into this class of work and taking a deeper interest in it. I remember a time when if a paper of this kind had been presented it would have had few to hear it. The average dentist paid very little attention to scientific or surgical work; they seemed

to be more interested in filling teeth. But it is different now, the object of the profession is the conservation of the oral cavity and the prevention of disease. The object of the dental profession to-day is to do all it can for the preservation of the teeth and in acquiring a knowledge of the pathological conditions of the oral cavity and a knowledge of how to treat these conditions in a scientific manner.

Dr. GILMER, in closing the discussion, said: I wish to thank the members for the kindly manner they have received my report of these cases, and to especially thank Dr. Noyes for the lantern slides he has made for me and the exhibition of them. The subject is not one calculated to interest the average practitioner, as his interests do not specially lie in that line. I am particularly indebted to those gentlemen who have taken part in the discussion, and since they have not combatted my theories or differed with me in the pathology, it is not desirable that I occupy your time further.

ILLINOIS STATE DENTAL SOCIETY.

Thirty-fifth annual meeting, held in Chicago, May 9, 10, 11.

DISCUSSION ON THE PRESIDENT'S ADDRESS. SEE PAGE 416.

Dr. C. E. BENTLEY: I am more than embarrassed, I am overwhelmed by the implied compliment contained in the request to open the discussion on so able a paper as the president's address. I think there are men here who are older and more qualified to discuss it than myself. But I certainly would be untrue to my emotions had I not some words of commendation for the principles enunciated and the sentiments expressed in this paper. The president has touched on a good many things, some with which I am not very familiar. But there were two thoughts advanced in the paper that are particularly near to me—one in relation to the Rogers' bill. This bill, within the last twelve months, has appealed to me in a very striking manner. It happened to be my misfortune, possibly, to have been drawn into the vortex of this conflict, and I happen to know something personally of the fight that was made for and against that bill. Be it said for the bill, with all its shortcomings, it was the most consummate piece of work calculated to elevate the profession that was ever given to the State of Illinois for passage in our legislature. Unfortunately, there were some misinterpretations regarding its status that could not be swept aside. Another thing—I blush for shame when I say it—

was that there was not the usual amount of persuasion, the necessary amount of grease, so-called, in order to interest some of those men who make laws in our State legislature. But this matter is not dead. The men who were interested in that affair are determined to make an impression upon the legislature to influence education in this State some day, somewhere and somehow.

The other thought that I am particularly interested in is the movement that has been recently inaugurated in one of our dental societies for the purpose of getting dentists into our schools and having them recognized by the Board of Education for the purpose of examining the teeth of children in the grammar departments. I need not cite to this body the good and far reaching results along the line of humanity when some such system as that is inaugurated. An effort has been made in an inexperienced way and a rebuff has been given, but we have profited by the mistake and now we are organized. We are preparing literature to be sent all over the civilized world in communities of over one hundred thousand inhabitants for the purpose of gathering data from men who are interested in education along this line of thought. This committee, which originated in Chicago, has already received communications from various parts of the world as to their method of procedure, and it is a little surprise to the committee in Chicago that a thought of this kind, which was considered to be original with us, had been thought of and is being thought of and acted upon in other parts of the world. I have been written to on this matter that the children of St. Louis are to be subjected to the examination of dentists, recognized by the School Board of St Louis, for the purpose that has been enunciated in the address Children in the city of Toronto cannot enter the public school without first having had their teeth examined by a dentist and a certificate of the same given to them. In Buda-Pesth, and a little town in Germany (Würzburg) this system has been inaugurated with great profit. Those of us who are interested in this work have read Dr. Bonwill's history of his travels through Europe, and certainly remember the wonderful description he gave of the little town of Würzburg and the wonderful results that are being brought about by this system. I received a letter from California the other day asking as to the methods we were employing and requesting us to give all possible data for the purpose of creating a similar system there. It is the object of the committee to gather all possible

data from places throughout the civilized world and to present it to the Board of Education of this city, and give them the results of what has been done by others, thereby presenting them with an incontrovertible argument for the necessity of having this thing established. Some members of the committee have received the personal assurance of some members of the Board of Education that when such a thing has been accomplished their coöperation will be given, and certain representatives of the press have given similar encouragement.

These two thoughts have been aptly treated by the president, and I think they are well worth the careful consideration of this body.

Dr. A. W. HARLAN: The president's address is its own best discussion, because it has touched on so many topics of interest that, it seems to me, one of the recommendations in the address ought to be acted upon, and that is with reference to our being represented at the dental congress in Paris next year.

The question discussed by Dr. Bentley, especially, with reference to the examinations of the mouths of school children, is one of great interest. It has been agitated in England for many years and a great deal of work in that line has been done by Fisher, of Dundee, and Cunningham, of Cambridge, and recently the Colonial Office of Great Britain has appointed a dentist to specifically examine the mouths of recruits for service in the various colonies of Great Britain, which is a step to having dentists in the army and navy. As to the recommendation in the address about congresses, I would like to say further that the director-general of the Paris Exposition has recently announced the officers of the congress, and the International Dental Congress is to be one of the official congresses of the government. On the 12th of April last the government representative, Dr. Gariel, presided over the first meeting of the various commissioners, so that this or any other dental society in the United States or anywhere else in the world need not have any fear that it will be a purely voluntary matter, as the government is sponsor for it in every particular. In fact, I have a communication in my pocket that will be presented later, urging that this society make an effort to be well represented at that congress.

Dr. J. H. SMYSER: I wish to say with reference to that part of the address concerning the amendments to our present law, in addition to what has been said, that we can now prosecute illegal

practitioners of dentistry. Under the new law cases can be brought before any court of competent jurisdiction instead of by indictment or information. Under the old law the fees accruing from such a suit went to the school fund instead of to the State board as the law is amended. The fee is raised from $25 to $100, and the money accruing from the prosecution, the penalty or fine, goes to the State Board of Dental Examiners.

Dr. C. N. JOHNSON: I have sitting on my left Prof. Watling, of Ann Arbor, and I am sure the society would be glad to listen to him.

Professor WATLING: I do not know that I can add anything to what has already been said of this able address. I was very much interested in hearing it. I am not at all familiar with the topics it touches because of living in another State. I am, therefore, not competent to discuss it.

Dr. E. J. PERRY: I have talked with several representatives in our State legislature at various times in relation to a dental law, and they have asked me what I wanted a law for. Well, in my unsophisticated way I have told them we want to build up the dental profession and protect the people from imposition. This is a wrong way to go at members of the legislature to get such a law passed, in my judgment. The dental profession has no right to protection by law, in my judgment. If we have a law passed in this State it will simply be a police regulation, and it is the intent of the law to protect the people; the building up of our profession is simply an incident in the minds of the legislators. No law would be allowed to stand upon the statute books that is not placed there for the specific purpose of protecting the people, and if that law incidentally upholds the dignity and character of our profession in the community, well and good. But this feature should be held from view when asking for legislation. All these matters are police regulations. Laws are presumed to protect all the people.

I am very much gratified to know that the profession has taken hold of the matter of examining the teeth of children in our public schools. We have no right to examine the teeth of these children from any selfish standpoint, unless it is for the purpose of doing good to the people, of protecting the children from the ignorance of their parents, or educating them for their own good not for personal or professional recognition.

Much has been said and written with regard to our being a learned profession and about the public not appreciating us. It is my opinion that if we are not appreciated, it is our fault. I believe the public measure us up fairly well, and I am one of those who think that the public size up the situation about right in the long run.

Dr. G. M. BRUNSON: I think this step of examining the teeth of children in our grammar schools is in the right direction, but we should go a little further. It is educational to the parents of those children if they could have relief as well. So many parents, even intelligent people, do not appreciate how soon the permanent teeth are erupted. If we could educate the parents to the importance of this subject, it would do considerable good.

Dr. IRA B. CRISSMAN: I believe the president in his address overlooked one point, and that is with reference to free dental work for the worthy poor. This is a step in the right direction if carried out to the full intention. I have given considerable thought along this line. It has been on my mind for many years, and I believe it was suggested by a paper before the Odontographic Society by Dr. Gramm, and an organization was formed, but they did not go far enough. The establishment of a certain number of free dental infirmaries is not sufficient. We have a class of worthy poor in the City of Chicago that needs our attention. In fact, we have them in all large cities. The colleges have endeavored to do something along this line, but have fallen far short of the goal of perfection. It is well known that our dental colleges, through their dental infirmaries, charge for operations performed and get a good price for it; and they lie when they say they do the work for the cost of the material. I say this with all due respect to the colleges, and they know it is true; and when men get up and lecture on oral hygiene and instruct students not to advertise, etc., they are simply going against their own interests and inoculating their students with good theory but poor practice. Through the dental infirmaries that have been organized in connection with the associated charities we may hope to get hold of and care for a certain class of the worthy poor. It is well known that there is a class of people in the City of Chicago who cannot afford to pay even a small amount to have their teeth filled who are suffering and should be attended to. The children of this class of people are the greatest sufferers, and

should have the best care. I believe if the dentists in this city will organize themselves and establish free infirmaries in their respective offices for the care of the worthy poor, not for their own personal aggrandizement or for the purpose of having a puff in the newspapers, they will accomplish a vast amount of good in this direction. Through the associated charities these worthy poor can be sent to the various dental offices. I devote Thursday afternoons from half past three to half past five, and furnish my own material, to this work. Some of these patients may be able to pay a little for the material used. Allow them to use it for car fare. We know very well that as these neglected children grow up they suffer from many ailments because their teeth have not been cared for. In regard to this work in our office, I claim you can give better service to your infirmary patients. The surroundings in a public infirmary are not very conducive for a fellow to do good work; also he loses valuable time going to such a place which had better be occupied in work. If the patient is too poor to pay car fare let the dentist pay it—same amount he would spend going to and coming from a distant point.

DISCUSSION OF THE REPORT ON DENTAL SCIENCE AND LITERATURE.

Dr. J. G. Reid: I consider it a great pleasure to say that this is the best report from this committee on this particular subject that has ever been presented to the Illinois State Dental Society. It comes nearest to filling the bill of what this committee is expected to do. It seems to have taken many years apparently to get this committee to understand what its obligation is in this matter, and these annual reports are now reaching very nearly perfection. It is certainly gratifying to me to speak in a complimentary way of the report that has been presented.

Professor Watling, of Ann Arbor, Michigan, was called for. He said: I came here to learn rather that to talk. I am a first rate listener, but not very much of a speaker, and I do not know that there is much chance for discussion on a paper of this kind. It certainly has been ably prepared, and we know that Dr. Harlan has spent much time in looking up the subjects of which he treats, and a person who has not studied the literature as he has done is not able to add to the interest of the report. I was much pleased with it and have learned a great deal by listening to it. I thank you very much for being called upon.

Dr. EDMUND NOYES: This paper is a striking illustration of the value to a society of getting the right man to do a certain work, and then let him continue it from year to year. I had the honor to propose this Committee on Dental Science and Literature; and while I do not believe that the criticisms we have had in previous years upon these reports were entirely justified, it is true there has been great improvement, and this is nearly an ideal report. There is only one thing in it which I wish to say anything about, and that is with reference to small coteries or clubs of dentists or small dental societies. In towns where there are two or three or perhaps half a dozen dentists, arrangements should be made for these men to spend an evening together occasionally. They can select the most interesting articles in our dental journals and freely discuss them. The published papers are much more numerous now than forty years ago, and the practical subjects on which ordinary men can write have become rather trite, and the members of a small club that meets frequently, may often get more good by reading a paper out of a dental journal and thoroughly discussing it than by hearing one written by one of themselves. We have need by all means in our power to encourage the fellowship of dentists, to encourage the interchange of thoughts and views, and especially the friendship of men who are practicing in small towns. It is more important in a town where there are less than half a dozen dentists that they should all be friends than it is that all should be friends where the number is much larger. It must be admitted, without question, that the necessity of the unaccustomed labor of preparing the papers is in many instances a serious difficulty in forming such small societies and keeping them together afterward. So I will welcome this suggestion very heartily indeed.

Dr. J. G. REID: I want to refer to one point incidentally touched upon by Dr. Noyes, and that is in relation to the periodical literature. I doubt in the smaller towns throughout the country, where there may be found from five to ten dentists, whether each one of them is supplied with the best dental journals. I have visited dental offices in such places, and have taken the pains to inquire quite frequently as to the number of journals that are generally subscribed for by these dentists. I find that perhaps they will subscribe for one journal, and it is rare for them to subscribe for two or three dental journals. They may take a dental

journal published in their State, if such a journal happens to be published there. Generally we will find the *Cosmos*, or one of the leading dental journals. Now, it seems to me, in places of that kind the dentists could get together, subscribe for the best journals, and have readings in the manner described by Dr. Noyes. The expense would be small; at the same time, it would do much good, and they would keep posted on various subjects. It is well known that the best dental journals do not publish any matter that has been republished. It must be original. Take the *Dental Cosmos*, the *International Dental Journal*, the DENTAL REVIEW, and one or two others I might mention; they are exclusive in their literature, and all the rest of the dental journals usually clip from them. It would seem to me that this would be an excellent way of spending one or two evenings every month. They could get all the dental literature in small towns through the dental journals. This is a happy thought and ought to be encouraged. I believe it would bring about a more harmonious feeling among country dentists.

Dr. P. J. KESTER: I agree with the previous speakers that this report comes being more nearly ideal than anything we have had for years. It is interesting and valuable, and I am sure will be read with great profit. The suggestion in regard to the study of text-books is of great importance to dentists. I am satisfied that the average young man, after he graduates, after having studied his text-books more or less faithfully, feels that he has done with them as soon as he begins to practice. If we were to study our text-books with the new editions that appear from time to time, it would result in a great profit to us. The articles which appear in our dental journals would be largely improved. There is considerable truth in the suggestion that the papers which appear in our dental journals after having been read before societies are imperfect and unsatisfactory. I have myself presented papers to dental societies which I felt were crude and imperfect and I can readily see that if I had given more time to the study of text-books and kept abreast of the times, that the product would have been much better. We can profitably consider the suggestions that have been offered by Dr. Harlan in his report.

Dr. C. R. TAYLOR. I wish to commend Dr. Harlan's suggestion in reference to the point touched upon by Dr. Noyes, and that is reading papers instead of writing them for small dental societies

In our town (Streator) we have an organization, and we all agreed to read a paper once a year. As I was the oldest practitioner in the organization, the duty fell on me first to write a paper, and it was the only paper written by the members. Here is a report dealing with subjects that every one of us can at least read a paper at society meetings. The question is in selecting something good to be read.

There is another thing we want to do, and that is to think more. What we want is the power to think, to cultivate the mind, so that we may have opinions of our own rather than those of others. Follow no book except as an inspiration. We read enough, but we do not think half enough. Education needs to be in the line of drawing out from the boys and girls, men and women, and not pumping something into them. Let us try to digest what we read and think more. That is what I need, and I am just an average man. Acting in accordance with the suggestions of Dr. Harlan, we should select something for our individual investigation, and all of our education must necessarily be along the line of the laws that govern the universe, and whenever we try to build up some scheme which is not in accordance with those laws, we are creating obstructions that will be swept away, and all that we have tried to build go with the destruction of the obstructions, and we will have to start again and lay the foundation and build in accordance with the laws of our lives and the laws of the universe if we hope to build for the best.

Dr. GARRETT NEWKIRK: I simply rise for the purpose of saying a good word for this report. Probably enough has been said, but I wish to add my opinion to those that have already been expressed. It is an excellent report, and one of the most perfect we have ever had presented to us. I want to take exception to a remark made by some one just now who said that it was the first report we have had which met the requirements. We have had a number of reports from Dr. Harlan that have been excellent, two quite as good as this one. It is only a continuation of the good work he began years ago.

Dr. ELGIN MAWHINNEY: I wish to commend this report. I think I have never heard such a helpful report. Now if we had a dental journal that would devote a couple of pages each issue to the subject matter of the books referred to it would indeed be most helpful. Busy practitioners have neither the time to read nor money to buy *all* the books issued on dentistry or medicine—and

here a journal could be of great benefit by presenting brief abstracts and reviews similar to the work done by the *Literary Digest* in the field of general literature.

I believe such a feature would not only attract the attention of the dental profession but would remunerate those who undertake it.

Dr. G. D. SITHERWOOD: I rise to add a word or two to this report. I like it, and have been greatly pleased, indeed, with it. There is one point in the report with reference to small societies which occurred to me might be made profitable, and it is this: I would like to know if it is not possible for us to have an epitome of each of the books mentioned in the report. Some of these books I will not have time to read, and it seems to me that those who read German and French could give us the gist of these books in an annual report. While it might make the report somewhat lengthy, I am sure it would be excellent and profitable reading. There are many literary men throughout the country who are constantly reviewing books. I had occasion last year myself to review the writings of a celebrated French author, and I could only get the edition of his books which were a hundred and forty-six years old, and I regretted very much that I was not able to read French; I had to take the English translation. The suggestion of Dr. Harlan might be made very profitable by dividing the work among the dentists in small societies, taking these books, or picking out a book and reviewing it and giving his fellow practitioners an epitome of the book.

Dr. G. V. BLACK: I wish to say, that I like this report very much, and I have nothing but commendation for it. I also liked very much the range which this discussion has taken. But I rise rather to present another thought along this line than to discuss what has been said. The report is a report of current dental literature for the year, and it is all right. But we are now about to end a century of work in the dental profession, and the thought comes to me that such a man as the chairman of this committee might do us an excellent work for the next year by going aside from the routine work and giving us a report of what has been done in the dental profession say in the last half of the present century. A very large proportion of this work relates to the work done for a year; it is good in itself, well planned and well undertaken for the time-being, but it is necessarily much of it a literature that

is temporary in it character. As time goes on certain things are developed that stay with us; they are adopted by the profession and utilized in our every day practice and become common to the dental profession. What is it that has been developed and made common to us within the last fifty years? Other things are developed and ideas presented. Many new things that are brought forward are discussed, studied, tried, and dropped under the law of unfitness for the uses intended. How many of these things have come into the profession and passed out within the last fifty years and have come in again perhaps and passed out, and are liable to come in again in the future and pass out? A paper or addition to this report which would take up this phase of the subject and give us the doings of the profession, the discoveries and inventions, not of a trivial sort, but of the sort that have made a lasting impress upon the profession that have come out within the last half century, would be of great value, and it seems to me a discussion of it at our next meeting would prove of great interest.

Dr. HARLAN (closing the discussion): The general expressions of commendation of this report are very satisfactory, and about the only thing I have to say is, that if it takes as much time to epitomize the progress of fifty years as it did this, I would not do very much next year. Even the little report I have presented to you has taken perhaps one hundred hours of my time, and there is no telling how long it would take to make a half century report.

With reference to the stimulating articles in the *Literary Digest* and other magazines, I would like to say this from the standpoint of a dental editor: The men who are engaged to do this kind of work are paid for it, and do not do anything else. If we could train a man to be attached to a dental journal to epitomize dental literature in this way, it would be a good thing. There ought to be five or six pages of it every month, and that means that the one who does it must devote considerable time to this work, because he has to look over a large number of books and periodicals, and read them more or less carefully in order to present them in an attractive style. I have tried this myself, and I have come to the conclusion that a man cannot do it successfully and practice dentistry. Then, too, there is not enough remuneration in the publication of a dental journal to justify a man in giving up his practice to present five or six pages a month in the form of a digest. I will present the matter to our publishers, and if they are willing to hire some one to do it, I will be glad to inaugurate that system.

THE DENTAL REVIEW.

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EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITOR: A. E. MOREY, PH. B., D. D. S.

THE NATIONAL DENTAL ASSOCIATION.

By looking over the preliminary programme there may be some subject in which you take a vital interest; if so, be sure and go to Niagara Falls, as there will be plenty of room and the surroundings are so profoundly restful and impressive that it is a whole education for some to witness the grandeur of the mightiest cataract in the world. All hotels are good, and the meeting place is excellent. All roads lead to Niagara Falls.

THE WISCONSIN STATE BOARD OF DENTAL EXAMINERS *vs.* THE CHICAGO COLLEGE OF DENTAL SURGERY.

By reading the appended decision of the court in Wisconsin it may be seen that the rule adopted in Washington requiring certain extra professional studies is held to be not good law in Wisconsin. From a careful reading we think that the board erred in not waiting until the time limit had expired before beginning proceedings against a graduate who could not be classed as one who fell within its future ruling beginning in October of this year. What might have been a wise step in securing a better preliminary education for dental students is at the first round knocked out. We have advocated the gradual raising of the preliminary educational standard by the Association of Faculties, but it has been at a stand-still for some years. What it might have done at the next meeting we are unable to say. The unwise action taken by the Wisconsin Board may be a serious stumbling block for some time in preventing the rapid advancement of the preliminary requirements for dental students. What the future action of the board may be we can

not predict any more than we can the final action of the higher court. We cannot look upon this present action as anything but calamitous for dental education, and regret the too apparent eagerness to fix upon the chief schools (as the same applies to the N. W. U. Dental School) of this city, as a mark for such an unwise proceeding. The college waived the advance period for the rule going into effect, which did not seem to bother the court very much. The rule is as follows :

SEC. 2. Colleges, to be recommended by this association, shall require of students applying to them for matriculation, a written entrance examination in the following studies :

English: Grammar, composition, spelling, punctuation, grammatical construction. Geography: Descriptive, physical. History: United States, general. Mathemathics: Advanced arithmetic, algebra—through quadratics, plane geometry. Latin: Rules of grammar, declensions, conjugations, construction, translation of easy prose. Elementary physics.

The candidate to make a general average of at least seventy-five per cent. In lieu of this examination, a certificate of graduation from a high school, college, or university; or an entrance certificate to the freshman class of the academical department of a college or university, may be accepted. The institutions, however, granting these certificates to be accredited as standard by the communities within which they are located. *This rule to become operative at the beginning of the session 1899–1900.* In admitting students, who have taken a partial course in other colleges, to advanced standing—junior or senior classes—colleges to be recommended shall require evidence from such students that their first matriculation was in accordance with the requirements under this rule governing the entrance examination.

Further comment on this case is deferred until the next issue.

SUPERIOR COURT, MILWAUKEE COUNTY.
STATE OF WISCONSIN, ex rel.
PETER T. DIAMOND,
vs.
R. G. RICHTER, et al.

Chapter 56c., of the revised statutes of the State of Wisconsin provides for the appointment of a State Board of Dental Examiners, and prescribed their powers and duties. It is expressly provided in that chapter that "It shall be unlawful for any person who was

not on the 30th day of March, 1885, engaged in the practice of dentistry, in this State, to commence such practice until he shall have obtained a license as hereinafter provided. Any person who may desire such a license may appear before the State Board of Dental Examiners at any regular meeting and be examined with reference to his knowledge and skill in dental surgery; if such examinations shall be satisfactory, the board shall issue a license to practice dentistry; provided that the board shall license without examination upon the payment of one dollar, any regular graduate of an incorporated and reputable dental college which requires that the candidate for graduation shall attend two full courses of lectures of five months each, the last of which courses shall be attended in the college which issues the diploma."

It appears by the petition herein that the relator applied to the State Board of Dental Examiners for license to practice dentistry in the State of Wisconsin, presenting to the board a diploma from the Chicago College of Dental Surgery, and paying the one dollar fee. His application was refused, and he now brings this mandamus proceeding to compel the board to issue a license to him. The respondents move the court to quash the writ, which proceeding admits all the allegations of the petition, which are properly plead, to be true.

From the petition it appears that the State Board of Dental Examiners has been in the habit of heretofore recognizing the diplomas from the Chicago College of Dental Surgery as satisfactory and sufficient under the provisions of the statute above quoted but that recently, at the suggestion of the National Association of Dental Examiners—though it is immaterial where the suggestion originated—the State board has seen fit to provide that they will not hereafter recognize a diploma from the Chicago College of Dental Surgery, or any other dental college, unless such college incorporates in its curriculum certain branches of study not heretofore required in the Chicago college. The board now refuses a license to the relator because his diploma comes from the Chicago college, which declines in the future to adopt the additional studies required by the State board. The simple question is thus presented whether the State board of Dental Examiners has power to say to a dental college "You must adopt a certain course of study which we consider as essential or we will not recognize your diplomas"; and whether if the State board takes such a position the court is without power to control the action of the board.

Now it must be clear that this State Board of Dental Examiners has the power conferred on it by statute, and nothing more or further. When a candidate for licensure presents his diploma, the State board must first inquire whether that diploma comes from a duly incorporated dental college. In this action that question is answered in the affirmative without dispute. Then the board must inquire whether such dental college has at least two full courses of lectures of five months each. That question in this action is answered in the affirmative without dispute. Then the board must inquire whether the candidate has attended the last of such courses in the college which issued the diploma. That question in this action is also answered in the affirmative without dispute. Then the further question is presented whether such dental college is a reputable dental college, and the contention here largely turns upon the scope, force and meaning of the word reputable. The petition in this action is somewhat lengthy in its statement of the history of the Chicago College of Dental Surgery; and this history shows that it is an old and well established institution, with a large corps of instructors, a large amount of money invested in libraries, appliances and apparatus; many conveniences for students and for lectures and legitimate work connected with the study of dentistry; that it has a course of study extending over more than two years and has a large number of graduates, and its diplomas have been generally recognized, and that even the diploma of the relator here involved has been accepted by the Illinois Board of Dental Examiners, and the relator licensed under it in that State. In short, the relator shows that the Chicago College of Dental Surgery has every element which ordinarily goes to make up an institution with a good reputation. Anyway, there is nothing in this record to indicate or suggest that it is not a reputable institution, whatever meaning may be attached to the word reputable as used in the statute. But the Wisconsin State Board of Dental Examiners assumes the right to say to a graduate of that institution "You cannot be licensed to practice in Wisconsin unless you get the Chicago College of Dental Surgery to adopt for their course of instruction hereafter certain studies that we want to have incorporated in their curriculum, because if they do not we shall set down their institution as not reputable. This position of the State board is defective in two vital particulars. In the first place it assumes that the State board in and of itself has a right to determine

what shall constitute a reputable dental college. And in the next place it assumes that the State board has a right to say that certain branches of study are essential to reputability as practically applied by the board in Wisconsin. In my judgment neither of these positions can be successfully maintained by the board.

The State board has no more right to determine what shall constitute reputability than they have to say what shall constitute incorporation. It has just as much right to say we will not recognize any dental college as incorporated unless it owned ten acres of land when organized as it has to say we will not recognize any dental college as reputable unless it requires in its course of study knowledge of Latin and the higher mathematics.

The State board has not an unqualified right to determine what reputability means, so that no one can question such a determination. If this were true, then there would be no standard for reputability. It would lie with a board constantly changing in membership, and the board one year might determine that one thing was necessary for reputability, and the next year the same board, or a board differently constituted, might determine that another thing was necessary to reputability. Reputability as used in the statute must mean the general repute of the institution. Thus, any one fairly intelligent and reasonably well posted on current events, whether doctor or layman, knows that Rush Medical College in Chicago, and the College of Physicians and Surgeons in New York City, are reputable institutions. They have such a history, such a record in the past, such a faculty, such course of study, such appurtenances and appliances, and such a list of graduates that any one is bound to know that they are reputable institutions. And if a State board having a right to act upon the diplomas of those institutions should assume to say that they were not reputable, it would be such an arbitrary and unjust determination that the courts would interfere. So here, under the showing made in the relation herein, the Chicago College of Dental Surgery has such a history, such a course of instruction, such a corps of instructors, such libraries, appurtenances, appliances and convenience for dental instruction, and such a list of graduates, that it is unquestionably reputable. And the claim in the part of the respondents that they have a right to say that it is not reputable is without foundation and cannot be sustained.

Then, again, it cannot be possible that the State Board of

)ental Examiners has a right to insist that in order to constitute a ental college a reputable school it must teach certain branches. hus, it is not necessary for a dental school, in order to be reputa- le, to teach Latin and the higher mathematics. A dental school an be reputable in every sense without teaching either of these ranches. And, whether or not they are taught in the Chi- ago college does not pertain to the question of reputability, and he State Board of Dental Examiners has no right to insist that he teaching of certain branches of study are essential to make he school reputable. They might be proper for high scholastic cquirements, but are by no means necessary to reputability.

The relation in this case shows that among intelligent men, vhether members of the dental profession or not, the Chicago College of Dental Surgery must be regarded as a reputable insti- ution, and the present attempt to insist that it is not reputable ecause it does not teach certain specific branches, would author- ze the State board to say that hereafter they would not recognize ny college of dental surgery as reputable unless it adopted a ourse in the Chinese language or in the Hindoo tongue. Fur- hermore, the power of the board to prescribe what scholarship cquirements are necessary for graduates of dental schools is con- ined in the statute itself; that is, the candidate for licensure must ave attended at least two full courses of lectures of five months ach in a dental school. It is proper for the board to inquire if is provision has been complied with. But when the board insists pon other scholarship acquirements, it is acting wholly outside of s jurisdiction or authority. The statute does not confer such)wer, and the board, therefore, does not possess it.

So that, in the opinion of the court, the contention of the State)ard must fail, because the board has not the right to fix an arbi- ary standard of reputability, and it has no right to insist upon rtain additional studies being followed in any dental college as e basis of establishing reputability, and that the course of the ate board in the premises is arbitrary, unreasonable and unjust, d such as the court cannot sustain. If this position is correct, en it must follow that this proceeding is well taken, and that the ard is not beyond the reach of the court under the circumstances. ie Legislature of the State of Wisconsin is from time to time tablishing various boards with varied power, and it cannot be at each board thus created is supreme, each in its own domain, d above the salutary control of the courts.

In this connection the case of the State, ex rel., Bowe v. the Board of Education of Fond du Lac, 63 Wis., 234, is instructive. That was a contest between a pupil in one of the public schools of Fond du Lac, and the City Board of Education. There was a regulation in the schools known and approved by the board, requiring each pupil to bring into the schoolroom certain wood under certain circumstances. The pupil refused to bring in the wood. He was suspended, and the board declined to reinstate him in the school. The father of the pupil brought mandamus proceedings and the supreme court sustained them. In that case the board took the position that it has absolute control of the schools, and could make all regulations for the government of the schools and the pupils therein, and that they had a right to expel the pupil because he would not comply in the regulations adopted by the board. The court, in its decision, in page 237, said: "School boards and boards of education have important duties to discharge, and we have no disposition, as our decisions show, to circumscribe their power in too narrow a compass. The State clothes them with power to make all needful rules for the government of the schools established within their respective jurisdiction, and to suspend any pupil from the privilege of the school for noncompliance of the rules established by them, or by the teacher with the consent. While from the necessity of the case, such discretion must be left to these boards as to the nature of the rules which are prescribed, yet it cannot fairly be claimed that the boards are uncontrolled in the exercise of their discretion and judgment upon the subject. The rules and regulations made must be reasonable and proper, or, in the language of the statute 'needful for the government, good order and efficiency of the schools; such as will best advance the pupils in their study, tend to their education and mental development, and promote their interest and welfare. But the rules and regulations must relate to those objects. The boards are not at liberty to adopt rules relating to other subjects, according to their humor or fancy, and make disobedience to such a rule by a pupil cause for his suspension or expulsion. We, therefore, think the rule of regulation requiring the pupil to bring up wood for use in the schoolroom was one which the board had no right to make and enforce."

So it seems to me clear in this action that the State Board of Dental Examiners in fixing an arbitrary standard of reputabili-

and prescribing the pursuit of certain studies as requisite to make reputability, is acting "according to their humor or fancy." And that under the circumstances the refusal of the board to license the relator to practice dentistry in the State of Wisconsin is wholly unjustifiable.

See State ex. rel., Adams v. Burdge, 95 Wis. 390.

Also Illinois Board of Dental Examiners v. Cooper, 123 Ill. 227.

State ex rel., Hathaway v. Board of Health, 103 Mo. 22.

State ex rel., Johnson v. Lutz, 136 Mo. 633.

Therefore, without difficulty the court reaches the conclusion that the motion to quash the mandamus proceedings must be denied, but with leave to the respondents to make return to writ upon payment of ten dollars and costs. And it is so ordered.

DENTAL COLLEGE COMMENCEMENTS.

University of California, College of Dentistry

Graduates, 1899—William Robertson Allin, Ricardo Arroyo, William Robert Bacon, Arthur Woodley Baker, Joseph Barnett, Robert Johnson Blake, May Blossom, Walter Joseph Burridge, Monroe N. Callender, John Albert Colegrove, Anna Bella Paterson Croall, Palmer Howard Dunbar, Norman Stanley Fairweather, Cecil Albert Fugler, Lee Robert Gambitz, George Weston Gove, Frederick Thomas Grant, Francis Joseph Gruss, Benagah Ralph Hamlin, Leonore Freida Hermann, Thomas Rodney Jones, Charles Frederick Kuster, William Joseph Lawson, George Willis Likens, William Horace Mayhew, James Benjamin Franklin Millar, Edward Martin Mulrenin, Louis Herbert Parks, Andrew Darwin Patterson, Stephen Livingston Piper, Charles Louis Reich, Wallace Hiram Renwick, Joseph Patrick River, Maurice Schiller, Thomas Ustick Smyth, Stephen Scott Southworth, Abraham Sinclair Sullivan, Alonzo Walter Tate, Howard Alan Tennyson, Rosa Edith Turner, Arthur Henry Wanz, William Louis Warnekros, Arthur Loring White, Edward Otis Whitney, John Jarvis Williams.

University of Buffalo.

Class in Dentistry—Frank Anderson, George Morris Austin, William George Beaumont, Charles Alonzo Bennett, Frank Joseph Biker, Michael Courtney Bradley, William John Burke, Duncan Alexander Cant, Frederic William Champlin, Charles Hoyt Churchill, Arthur Burdette Cobb, Frank Winthrop Cook, Frederic Seaman Cox, Leon Van Cursons,* Guy Rufus Danforth, George Edward Dougall, John Elmor Dunn, Harry Gardiner Fairfield, Robert Joseph Fletcher, Charles Joseph Fraley, Charles Elisha Gillam, Gladstone Goode, Berrand Oscar Harmon, Charles Henry Hickelton, Abram Hoffman, George Lee Horton, Arthur Fuller Isham, William Dawson Jacob, Alfred Osman Jerrett, Arthur John Jessel, Clement Dale Kennedy, Burt Kinsella, Francis Montgomery Lee, William Nicklis Leonard, Harry Heathcote, Luton, Harry Koch Mason,

*Diploma held on account of being under age.

Russel George William Merkley, Stanley Albert Merkley, John Middaugh, George Franklin Mouthrop, Mansfield Earnest Mooney, Arthur Bryce Muir, Emanuel Muntz, Daniel McPherson Murray, Thomas Francis O'Shea, George O'Leary, Frederick William Orwan, Herman Eugene Reynolds, Clare Eugene Robinson, William James Roche, Robert Sabin, Robert Roy Schmidt, Grace Newton Shirley, B. L., Howard Arthur Smith, Louis Weston Smith, Alonzo Whitcomb Tracy, James Forbes Wardner, William Howard Willson.

Missouri Dental College.

The Thirty-third Annual Commencement of the Missouri Dental College, Dental Department of Washington University, was held at the Fourteenth Street Theater on Thursday evening, April 27, 1899. The degree of D. M. D., (Doctor of Dental Medicine) was conferred upon each of the following candidates:

Class of 1899—Elwood Alley, Missouri; Henry Clinton Alloway, Missouri; Willis Bertram Arthur, M. D., Missouri; Roy Bay, Missouri; Elliott Robert Black, Illinois; George Washington Corder, Missouri; Claudious Golder Farrow, Arkansas; Stonewall Jackson Ferguson, Missouri; Henry Robert Hoffman, Missouri; Merle Robert Hopkins, Illinois; Porter Kendall, Missouri; Herman Max Lansberg, Missouri; Philip Jay Lehnhard, Jr., Missouri; Charles Robertson Mockbee, Missouri; Henry Charles Mueller, Illinois; Sylvester Cook Nifong, Missouri; Clarence Leffingwell Sappington, Missouri; Edward Schlagenhauf, Illinois; Alexander Scherzinger, Missouri; Ira Dudley Scott, Missouri; Herman Theodor Spann; Henry Garrettee Steinmesch, Missouri; Charles Edmund Stephens, Alabama; Edwin William Brantner Temm, Missouri; Edward Wilber Walker, Missouri; Wilson Rudolph Weber, Texas; John Henry Wild, Missouri; Rudolph Felix Wild, Missouri; Raymond LaClair Willett, Iowa; Eugene David Wurtz, Illinois.

Number of Matriculates for the session, 113.

Number of Graduates, 30.

REVIEWS AND ABSTRACTS.

COMPARATIVE DENTAL ANATOMY. By A. H. THOMPSON, D. D. S. Topeka, Kan. Published by the S. S. White Dental Mfg. Co. Philadelphia, Pa. Price, cloth, $2.

The dental student has in this little work about what is needed in a full dental course. It seems to the writer that studies of this character are needed by the majority of dental students at the beginning of the course, as most, if not all, are loose thinkers. Such important studies as comparative anatomy will, if persisted in, make of the student a broader man and at the same time will fill him with a vast deal of practical knowledge. We have been told that there are a few errors in this work, but in looking it over we found them so trifling that it needs an expert to find them. A

dental students should be compelled to have this or a similar work, as the subject is of such importance that it can no longer be left out of a complete dental course of instruction.

Dr. Thompson has been a teacher in this branch of anatomy for many years, and it is presumed that he knows the needs of a dental student pretty well. The book is well printed and the illustrations are good and self-explanatory. The questions following the chapters are lucid, and we feel like commending such books as these for use in dental schools.

CHEMISTRY AND METALLURGY APPLIED TO DENTISTRY. A manual of practical dental chemistry and metallurgy designed as a text-book for dental schools and as a guide in the laboratory of the dentist, by VERNON J. HALL, Ph. D., Professor of Chemistry and Director of the Chemical Laboratories in the Dental School and in the Woman's Medical School of the Northwestern University, 270 pages cloth, thirty-seven wood cuts and half-tone frontispiece. Price, $2. Published by the Technical Press, at Evanston Ill., 1899.

That the sciences of chemistry and metallurgy are of great mportance in their applications to dentistry and that the study of hem can be pursued with great profit to the dental student are acts not as widely recognized as they should be. Unfortunately he instruction of dental students, in these subjects, is generally ncomplete and of little practical value to him, and in consequence ie has come to look upon the work along this line as a bug-ear. Among the most important causes of this state of affairs, n my judgment, has been the lack of a suitable text-book. We nd outlined in Dr. Hall's book a practical laboratory course, iat the student may have training in this connection such as he btains in other branches; e. g., in prosthetic dentistry and other ranches are books that lead him through a course of study that ppeals to him as being of inestimable value in the pursuit of is profession. This book is calculated to supply a similar want n the field of chemistry and metallurgy.

In this book are considered all chemical and metallurgical acts that have a direct and important bearing upon dentistry. lthough designed primarily for use of advanced students, it can e used from the beginning by supplementing it with the neces-ary lectures on general chemistry. This book will form a valu-

able addition to the list of reference books in the library of the practicing dentist.

The introductory chapter considers the metals in a general way, their distinction from nonmetals, their occurrence, their extraction from ores, and their physical and chemical properties which render them of value in dentistry and in the arts. As will be seen, this chapter contains a full discussion of such physical properties as hardness, malleability, elasticity, etc., including tables of same.

In Chapter II. each individual metal is studied in detail—its symbol, combining weight, specific gravity, melting point, its tendency to oxidize, to discolor, its solubility, its alloys and ores, and other data of value to the student, and practitioner as well.

Part II. chiefly consists of a consideration of problems having a direct bearing upon dental practice, and is especially designed to supply the student with a competent knowledge of the various materials with which he will come in direct contact. The refining of scrap metals, and particularly the recovery of silver and mercury from waste amalgams, the preparing and testing of the various alloys used in dentistry—such as solders, alloys for dies, amalgam alloys, etc.—and the assay of the dental alloys, the preparing and listing of amalgams and cements for expansion, contraction etc. Also, the analysis of teeth, saliva and urine are among the most important topics considered.

A. H. Peck.

PRACTICAL POINTS.

Medicines and Brushes.

Letter From W. G. A. Bonwill, D. D. S.

You are correct in your veto of washes and medicines generally as applied to the mouth, teeth and general system, and also to the toothbrush; and yet you require qualification as to the brush.

When a patient inquires of me for a tooth wash he is told when one is needed I will apply it personally and demand that the patient shall never take the responsibility.

If the dentist has done his duty to each and compels the return to him whenever they notice anything "out of joint," they had left his office only the day before, do not wait for a s

nonths' periodical visit. But I give them a soap ladened with umice and a brush, such as I send you as sample, and which I ave made by the gt. gross, and order that it is to be used one inute, three times daily, after each meal.

But how? Neither across nor up and down, but simply to lace this diminutive brush in one position and press it in between ie teeth, covering the whole of them in and out, without other ian a wriggle. The stiff bristles go everywhere and pick off the ccumulation, and act as a hundred picks, and no injury is done ie gums nor teeth.

The brushes are narrow, short, and bristles wide apart, and pecial space for the application over the incisors without injury the brushes.

They soon dry and remain stiff until worn out, besides they are treated that no water is absorbed by the brushes, and can be kept solutely clean. An experience of thirty years with these rushes and the soap, I am justified in saying that nothing gives y patients more satisfaction, and for which they are most rateful.

The pyorrhœa never comes to any of my original patients or is there any recurrence after I once treat the cases that come me.

The committee appointed in 1897 by the Stomatological Sec- on of the A. M. A. to examine fifty patients of a standing from 54 up to date remarked that "they never saw such clean, healthy id perfect teeth and gums."

Now, my dear doctor, with all consideration for your opinion out the brush I think I am entitled to respect for a lifelong perience. Am I not?

For the ordinary brush I say you are right in your *anathemas*. eddlesome surgery in the normal mouth is as reprehensible as the general treatment of surgery. Please tell me what you have say about my pigmy brush? Don't forget how I have told you use it? Wriggle, wriggle, wriggle all the time but only for one inute and the soap each time.

I am your admirer on washes, brushes and medicine generally cally or internally.

W. G. A. BONWILL.

MEMORANDA.

Dr. I. C. St. John of Minneapolis is dead.

Dr. H. P. Smith, formerly of Chicago, is located in Simla and is doing well

Dr. E. A. Lundy, formerly of Honolulu, is now located in Adelaide, South Australia.

Dr. Geo. B. Perry, of Chicago, was married May 24 to Miss Lewandowska of Chicago.

Dr. E. R. Warner, of Denver, Colo., was a visitor in Chicago during the month of May.

Drs. H. J. McKellops and A. H. Fuller attended the Illinois meeting in May Dr. McKellops is looking and feeling very well.

The *Cosmopolitan* magazine offers $200 for the best essay on the care of the teeth. Manuscripts must be in the hands of the editor by August 20.

The New Orleans College of Dentistry will open its doors about October 1 with Dr. J. J. Sarazin as dean and head professor of operative dentistry.

The next meeting of the National Dental Association will be held in the International Hotel at Niagara Falls Tuesday, August 1, and continue four days

The Faculties' Association and the Association of Dental Examiners will meet at Niagara Falls preceding the meeting of the National, beginning about the 28th or 29th of July.

AMERICAN MEDICAL ASSOCIATION.

Section of Stomatology. Chairman, Dr. M. H. Fletcher, Cincinnati; Secretary, Dr. E. S. Talbot, Chicago. Next place of meeting, Atlantic City, N. J.

It seems that the English dental press is somewhat lax in not reporting the efforts that are being made in the United States and by the American Dental Society of Europe to suppress the illegal traffic in diplomas. As the demand comes from Europe for these worthless parchments, it would seem that some effort should be made against this evil by informing their readers of the facts in the case.

The Board of Dental Secretaries (examiners) was organized at Lincoln, Neb May 1. The names and residences of the members are as follows: Dr. W. C. McHenry, of Nelson, Pres.; Dr. H. W. Allwine, of Omaha, Vice Pres. and Treas Dr. L. N. Wente, of Lincoln, Sec'y. The board aims to be active, and will be pleased to coöperate with dentists individually or collectively for the upbuilding of the profession. Respectfully, H. W. ALLWINE.

MINNESOTA STATE DENTAL ASSOCIATION.

The sixteenth annual meeting of the Minnesota State Dental Association will be held at Northfield, July 25, 26 and 27, 1899. Steps are being taken to make this the best meeting of the association. All dentists are invited to attend

H. L. CRUTTENDEN, *Secretary.*

Northfield, Minn.

COLORADO STATE DENTAL ASSOCIATION.

The Colorado State Dental Association will convene in Denver June 13 and remain in session June 13, 14 and 15. It is hoped that a large number from out of the city will avail themselves of the opportunity and attend, as there will be much of interest to all dentists.

SARAH MAY TOWNSEND,
Denver, Colo. *Cor. Sec'y State Dental Association.*

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The sixteenth annual session of the National Association of Dental Examiners will be held at Niagara Falls, commencing at 10 o'clock A. M. Friday, July 28, and continuing the 29th, 31st and August 1, 1899. The hotel and hall where the sessions will be held will be given in the July number of this journal. It is earnestly desired that delegate members from every State will be represented this year.

CHARLES A. MEEKER, D. D. S., *Sec'y.*

WISCONSIN STATE DENTAL SOCIETY.

The twenty-ninth annual meeting of the Wisconsin State Dental Society will be held in the assembly chamber, capitol building, Madison, Wis., July 18, 19 and 20, 1899. A cordial invitation is extended to all members of the profession to be present.

The State Board of Dental Examiners will meet at the same time and place for the purpose of examining candidates for license to practice.

21 West Madison Street, Madison, Wis. W. H. MUELLER, *Sec'y.*

The Odontological Society of Chicago was entertained by the Odontological Society of Madison, Wis., Saturday, June 10, at the Park Hotel, and at "Red Gable's" on Lake Mendota. The entertaining members were:

C. C. Chittenden, President, F. T. McConnell, Secretary, W. H. Mueller, E. L. Hart, A. L. Bents, J. B. Baker, J. D. Purcell, S. H. Chase, S. A. Nielson.

Among those from Chicago were E. A. Royce, T. W. Brophy, L. L. Davis V. L. Copeland, L. L. Skelton, C. N. Johnson, J. H. Woolley, W. B. Ames, A. W. Harlan, J. G. Reid; F. H. Gardiner.

Other guests of the society were Hon. D. K. Tenney, Judge Lewis, General Bryant, Mr. Stevens and Hon. J. Gurney.

There were many ladies present, but the reporter was unable to obtain their names.

THE AMERICAN DENTAL SOCIETY OF EUROPE.

The twenty-sixth annual meeting of the American Dental Society of Europe will be held in Brussels on August 7, 8 and 9, 1899.

Arrangements have been made at the Hotel Metropole for the accommodation of the members and their friends, while the meetings will be held at the Hotel Ravenstein.

Brussels and its surroundings are noted for their beauty and historical interest, and no effort is being spared by the Executive Committee to make the meeting specially instructive and pleasant.

A cordial invitation is extended to any American colleagues who may, at the time, be visiting Europe.

WALDO E. ROYCE, *Secretary.*
2 Lonsdale Gardens, Tunbridge Wells, England.

NEW JERSEY STATE DENTAL SOCIETY.

The twenty-ninth annual session will convene at the Auditorium, Asbury Park, at 10 A. M. Wednesday, July 19, and continue the 20th and 21st. The hotel headquarters will be at the Hotel Columbia; the rates will be $2.50 per day two in a room, $3 per day one in a room.

The demonstration of porcelain inlay work will receive more than usual attention. Dr. Jenkins, of Dresden, will give a clinic with the Jenkins furnace, and read a paper on the subject. Dr. Joseph Head, of Philadelphia, will also clinic with the electric furnace and read a paper; Dr. W. A. Chupein, of Philadelphia, will also demonstrate his method of inlay work, and read a paper.

The exhibition of electrical appliances for the dentist will be of more than usual interest and of greater variety than usually seen at dental meetings. The clinics generally will be practical and of useful interest to the everyday working dentist.

Secure your rooms by July 1, and come and see our methods.

CHARLES A. MEEKER, D. D. S., *Sec'y.*

NATIONAL DENTAL ASSOCIATION.

The following is the preliminary program: "Porcelain Enamel Inlays," Dr N. S. Jenkins, Dresden; "Orthodontia" (Illustrated), Dr. Edward H. Angle, St Louis; "The Absolute Efficiency of the Controllers of the Market for Dental Cataphoresis," Dr. W. A. Price, Cleveland; "Dental Electricity," Dr. L. E Custer, Dayton; "The Practical Side of It," Dr. S. S. Stowell, Pittsfield; "A Bastard Profession," Dr. E. P. Beadles, Danville; "Surgical Operations in Early Infancy for Palatal Defects," Dr. Truman W. Brophy, Chicago. "Cements," Dr. E. K. Wedelstaedt, Minneapolis; "The Reflexes of the Three Lower Molars," Dr. James Truman, Philadelphia; "Operative Dentistry," Dr. J. N. Crouse, Chicago; "Gomphosis," Dr. B. H. Catching, Atlanta; "Prognathism. Extraction and Delay versus Expansion and Early Attention" (Illustrated), Dr. R. Ottolengui, New York; "Some Phases of the Cement Question, Dr. W. V. B. Ames, Chicago; "A Study of Harelip and Cleft Palate" (Illustrated), Dr. Thomas Fillebrown, Boston; "Dies and Counterdies," Dr. Rober H. Nones, Philadelphia; "Pyorrhœa Alveolaris," Dr. M. L. Rhein, New York "Constitutional Deterioration the Cause of Dental Caries," Dr. Harvey, Battl Creek; "Oral Affections in Secondary Syphilis," Dr. W. C. Barrett, Buffalo "The Physiological Relations of the Adult Tooth-Pulp to the Economy," Dr. C L. Hungerford, Kansas City; "Etiology of Gnathic Abnormalities," Dr. A. H Thompson, Topeka; "The Dental Profession in Charity; an Experiment in Chicago," Dr. Carl Theodore Gramm, Chicago; "Some New Points in the Anatomy of the Face and Jaws," Dr. M. H. Cryer, Philadelphia; an important pape by Dr. J. Leon Williams, of London; "Recent Advances in Therapeutics," Dr A. W. Harlan, Chicago.

THE

DENTAL REVIEW.

Vol. XIII. CHICAGO, JULY 15, 1899. No. 7

ORIGINAL COMMUNICATIONS.

The Structure of the Enamel with Reference to Cleavage and the Lines and Angles of Cavity Margins.*

By F. B. Noyes, D. D. S., Chicago, Ill.

In presenting this paper to you I do not expect to bring forward any new ideas or demonstrate any new fact. It is not the result of any original investigation, but simply a new demonstration of old facts, or perhaps better stated as a new illustration of old observations; for the illustrations are mine, most of them have been made in the last few weeks and especially for this meeting, never having been shown before.

Before going on I wish to say that in the preparation of these illustrations I am indebted to Dr. G. V. Black, who has given me free access to his collection of ground sections and constant and valuable assistance and suggestions and for whom they are intended as illustrations to be used in a work which he is preparing; also to my class in the Northwestern University Dental School, each student having ground two sections and left them with me as the permanent property of the histological museum of the school. This has given me the inspection of a large number of grindings and some very valuable specimens.

The structure of the enamel is unique in mammalian histology, in that the tissue is composed entirely of formed material, the living tissue which formed it having disappeared after the formation was completed. It is also the only calcified tissue formed by an epithelial or epiblastic organ, which is a distinction often lost sight of, and is in itself sufficient to put the tissue in a class by one. The shells of mollusks are also of similar character, but

*Read before the Illinois State Dental Society.

differ very markedly from the enamel in the degree of classification which the organic matrix has undergone; the shell does not contain any living matter, though it has a large percentage of organic formed material which has not been calcified.

By microscopic study the enamel is found to be made up of rodlike structural elements or prisms, of more or (Fig. 1) less perfectly five or six sided outline in section and showing alternate expansions and constrictions in their length. (Fig. 2)

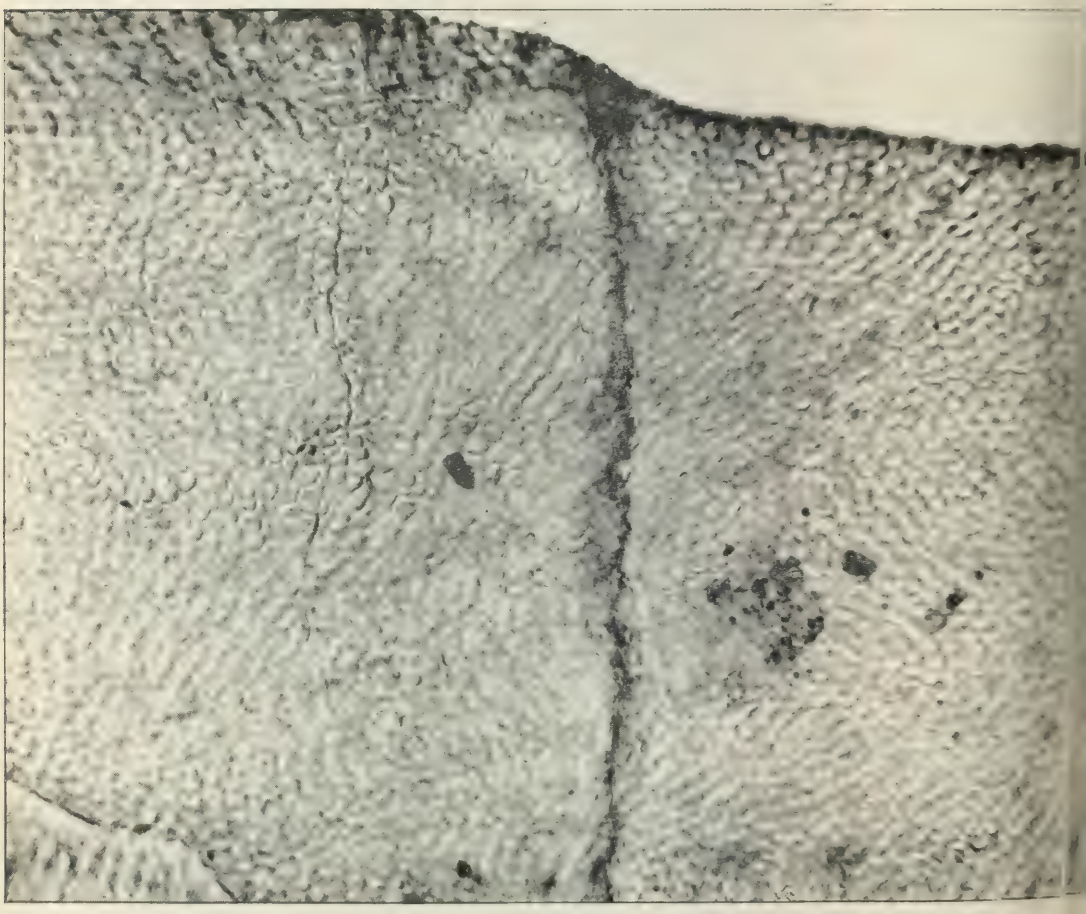


FIG. 1. Cross section of enamel.

As the prisms are arranged the expansions of the rods are opposite to the expansions of the adjoining rods and do not interlock with their constrictions, the spaces thus formed are filled with cementing substance which, in perfect enamel is wholly calcified as well as the rods. In formation the rods grow on their ends only, and each expansion marks a new globule of partially calcified material which was added to the rod, the

calcification of which together with the cementing substance surrounding it being completed later.

Although the cementing substance and the prismatic substance are both perfectly calcified they show marked differences, chemical and physical. The cementing substance is much more rapidly acted upon by acids and is much weaker, at least to incisive force.

In structure the enamel may be compared, for illustration,



FIG. 2. Isolated enamel rods.

with such substances as fibrous woods, or possibly with certain igneous rocks which are made up of crystals in the form of long prismatic columns. When treated with solvents such rocks tend to break up into the columns, and when fractured they cleave in the lines of the columns, sometimes breaking across a few, but following the general direction of crystallization. When fibrous woods are treated with certain substances the interfibrous

substance is converted into pulp, the fibers resisting the action of the reagent. This is illustrated in the manufacture of paper.

The enamel rods or prisms run from the surface of the dentine to the surface of the crown, many of them probably without break (Fig. 3), but as outer surface of the enamel is much greater than the inner, either the rods must be much larger at their outer than their inner ends, or else there must be many rods which do not reach the surface

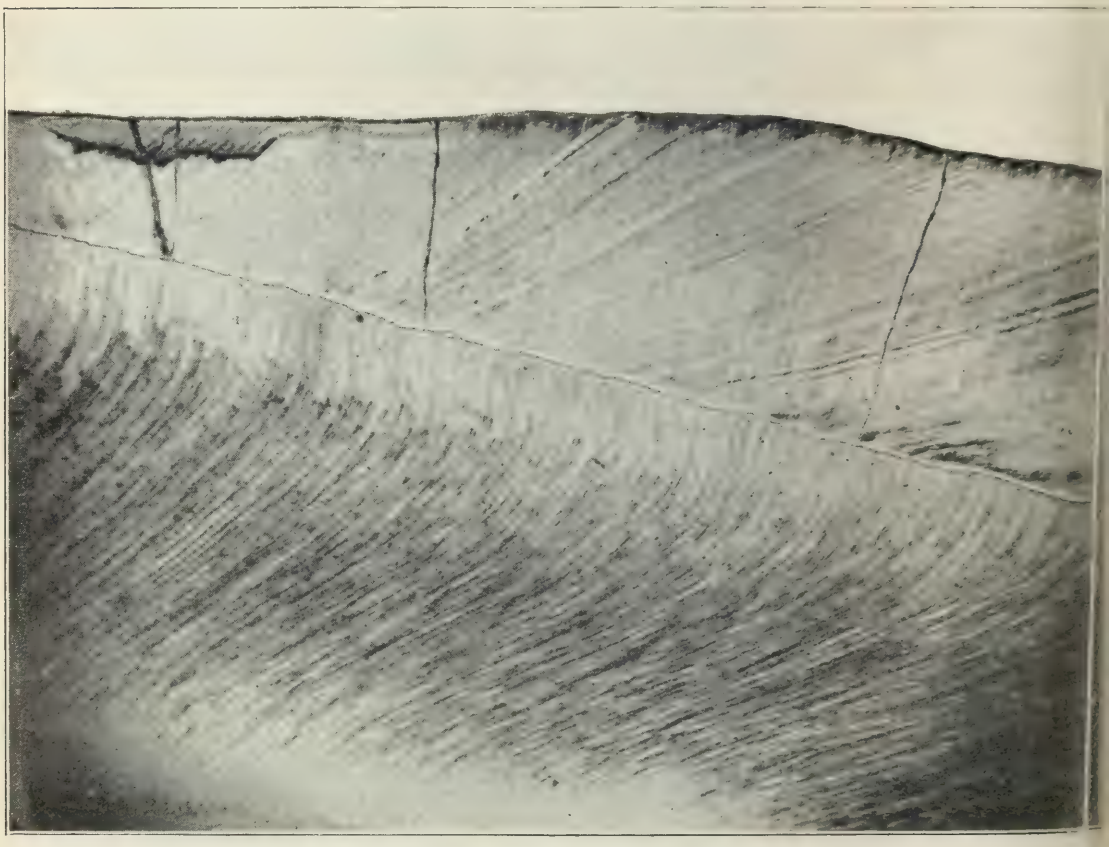


FIG. 3. Straight enamel. Labial plate of an incisor.

of the dentine. By examination we find that the rods are of the same size at their surface and dentinal ends, and the increased area is provided for by short rods which pass from the surface part way to the dentine, ending in tapering points between the converging rods which pass the entire distance. These are points exceedingly hard to show in photographic illustrations, because the rods are not straight, and individuals are hard to follow throughout their length.

The direction of the enamel prisms is generally described as perpendicular to the surface of the tooth, or in lines radiating from the center of the pulp chamber. This description is by no means complete, and we find very important exceptions, in fact, may almost say that in but few places is it exactly true; and the con-

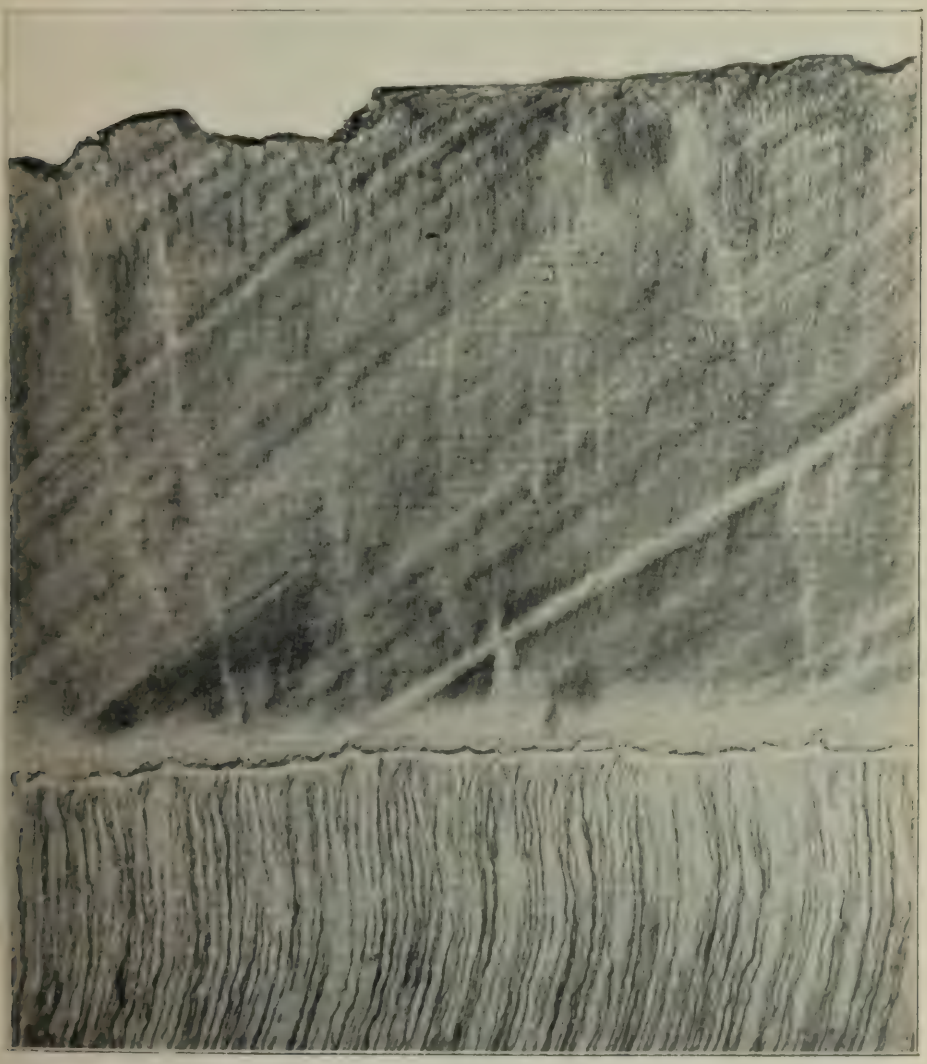


FIG. 4. Straight enamel, showing dento-enamel junction.

sideration of the direction of enamel rods in detail becomes a most important factor not only in securing proper conditions of cavity margins, but also in promoting ease and rapidity of operation.

Before going on to the consideration of the lines of cavity margins and their angles, I wish to speak of the principles of cleavage, and the requirements for strength of enamel margins.

In writing this paper I have used some terms which are still under discussion. For purposes of description I have used three planes, a horizontal plane and two axial planes. These Dr. Black defines (in a work not yet published) as the horizontal plane, passing through the tooth in a direction at right angles to the long

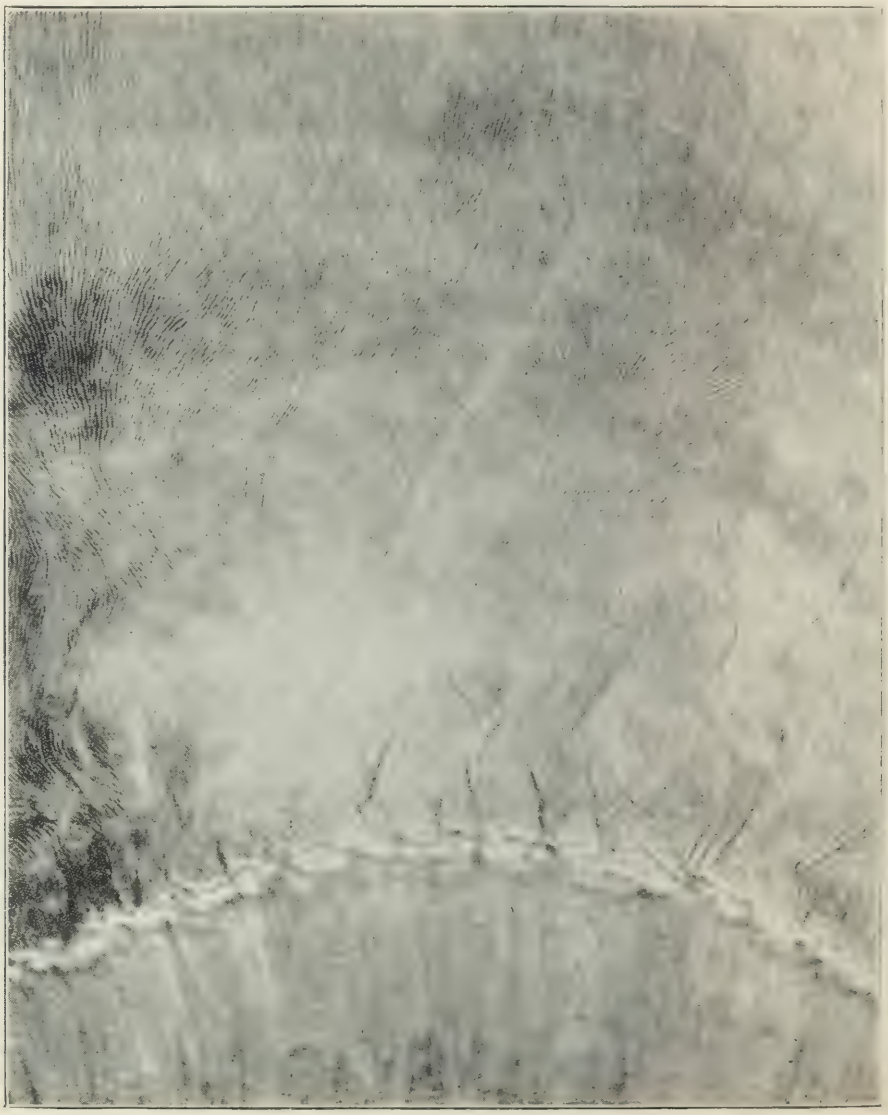


FIG 5. Gnarled enamel, showing dento-enamel junction.

axis of the tooth; the mesio-disto-axial plane, passing through the tooth from mesial to distal, parallel with its long axis and the central line of the crown; the bucco linguo-axial plane, passing through the tooth from buccal to lingual, parallel with the long axis of the tooth and the central line of the crown; these are self-

defining terms, and for a long time have been used by the profession in practically the same form.

The surface margins are the most difficult things in the preparation of cavities to describe with exactness. A number of terms are in use and it is desirable that one be selected and used exclusively to make our nomenclature more exact, and to avoid confusion in description. The outer margin of the cavity, where the cut surface joins the natural tooth surface, has been called the enamel margin or enamel edge, but enamel edge is also used to

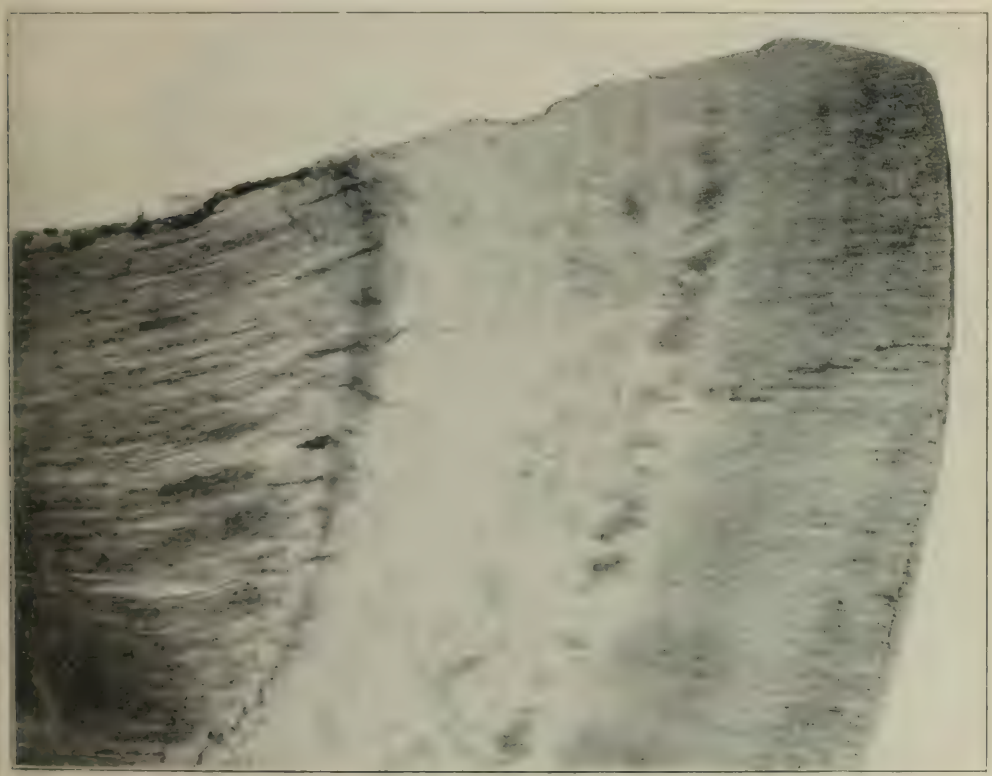


FIG. 6. Enamel rods, showing straight outer and twisted inner ends.

ndicate the cut surface of enamel forming part of the cavity wall, n the sense of its being the edge of the enamel plate. The enamel nargin is usually beveled, and enamel bevel has been suggested is term for the angle formed by the tooth surface and the cavity vall. There are places, however, where the enamel does not form part of the cavity wall. Cavo-surface angle has been suggested is describing the angle formed by the tooth surface and the cavity vall. But one bevel is spoken of, the *cavo-surface bevel*. Walls

of cavities, both the dentine wall and the enamel wall, are spoken of as *inclined* toward or away from the planes of the tooth.

I shall use this term partly to bring it before you for discussion. The word which most exactly expresses the idea to most minds is the one which will last. They supply a need which I have felt for a long time.

Cleavage may be defined as the tendency of a given substance to split or separate in definite directions, as wood splits in its grains or crystals in their lines of crystallization.

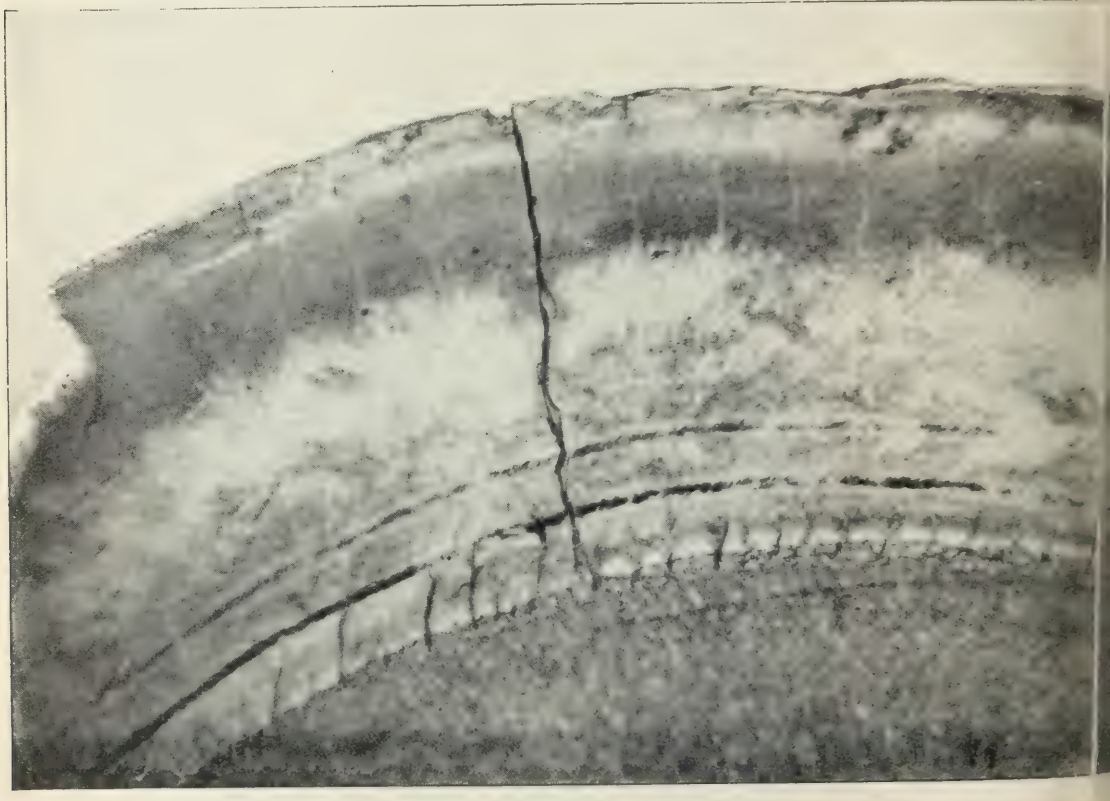


FIG. 7. Enamel rods, showing straight outer and twisted inner ends.

In cutting away unsupported enamel the sharp edge of the chisel engages with the surface, penetrating to a very slight distance, and then the force applied at an acute angle to the direction of the rods splits it through more or less accurately in the direction of the rods, as ice is split with an ice ax. It is not that the instrument penetrates and separates rod from rod at all, but the sharp edge makes a scratch on the surface, as a diamond scratches glass and then the force applied simply fractures the substance in the

lines of least resistance. How slight the force which is required to split enamel, when one has learned to recognize the lines of cleavage, is still continually a matter of surprise to me.

Unsupported enamel will almost always cleave if the force is properly applied, though the direction of the rods may not be straight, but if the enamel is supported by sound dentine we have a very different condition. If the direction of the rods is straight, (Fig. 4) and parallel with each other and a break has been made through the entire thickness to the dentine, it will split away in chunks with little force if properly applied. If the direction of the

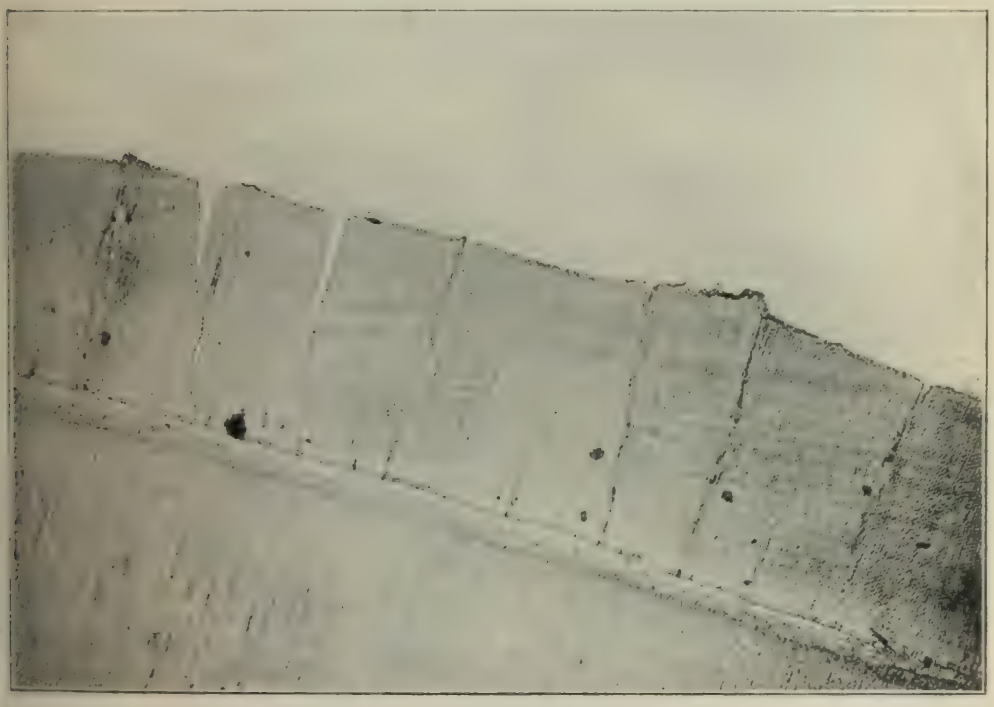


FIG. 8. Straight enamel rods, showing cleavage cracks.

ods is twisted (Fig. 5) and curled about each other, as we ind them in many teeth, they will not split through to the lentine, but will break across the rods where they curl around ach other, the outer ends of the rods being straight for a hort distance in almost all positions (Figs. 6 and 7). This ifference causes the very greatest difference in the feeling f the tissue to cutting instruments. There is as much difference a cutting a piece of enamel with straight rods and one with wisted and interwound rods as there is between splitting a piece

of straight grained pine and a cross grained hickory. There is no difference in the density of the two pieces of enamel; the "hardness," the structure, is no more perfect in one than in the other, and one will not resist the progress of caries any better than the other, but one will cut easily and the other will not. If the dentine can be cut out from under such gnarled enamel it will cleave through without much difficulty; but if it must be cut without this it can only be done by a planing motion of a very sharp and hard tempered instrument. In the latter part of the paper I will speak

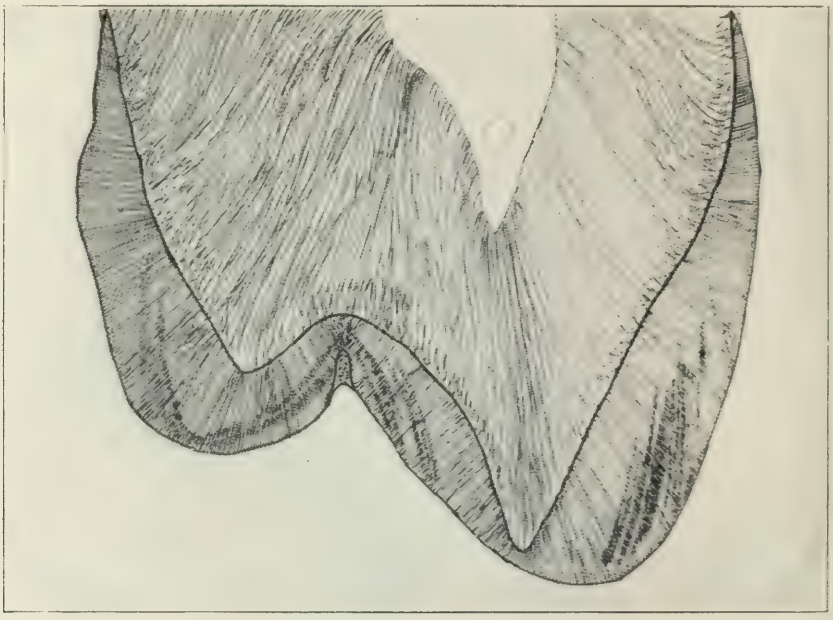


FIG. 9. Drawing from a photograph, showing the plan of arrangement of the enamel rods. The crown of a bicuspid.

of the cleavage of enamel in connection with the formation of cavity margins.

The unbroken enamel is an exceedingly hard and strong substance; when dry it will often turn the edge of a well tempered steel instrument and you have probably seen it strike a spark in the mouth under the heavy use of an instrument not well directed, but when a break has been made in it it will chip away from the edges very easily. In this respect it may be likened to a pavement of hexagonal columns well cemented together. It is very hard to make a hole in it when coming down upon the perfect surface, but let the pavement be undermined or a break established and the columns ca

asily be tipped into the break (Fig. 8). The enamel has een called a coat of mail for the tooth and if we consider the rrangement of its structural elements we find that the crown is onstructed on a most beautiful plan, the principle being that of ie arch.

Beginning at the gingival line the prisms are inclined



Fig. 10. Tip of an incisor, showing lines of stratification of the enamel.

ically from the horizontal plane often as much as ten to enty centigrades (Fig. 9). Here the short rods rest against e dentine and are overlapped and supported by the cementum ming a buttress to the arch. As we pass toward the occlusal, in e gingival half of the middle third of the axial surfaces we reach

a point where the rods run outward in horizontal plane and ar perpendicular to the surface of the enamel. Passing occlusall from midcrown the rods become inclined more and more, occlu sally from the horizontal plane and toward the axis of the tooth a the cusps, marginal ridges, or occlusal edges are approached, s that when these points are reached the rods are running parall with the axis of the tooth, and in these positions are almost alway twisted and curled around each other to form the strongest possibl kind of a keystone, and to support the short rods that must b



FIG. 11. Bucco-lingual section of a bicuspid.

placed in that position. Passing over the marginal ridge or do the central inclination of the cusp, the rods become again inclin away from the axis toward the groove or fissure, and where the t plates join the rods come together at an acute angle supporti each other.

The strength of this plan of construction is easily recogniz and also the effect upon lines of cavity walls. For instance, on t occlusal surfaces of the molars and bicuspids, the walls may be c parallel with the axial planes and note the resulting conditions

e cavo-surface angle where stress will come on enamel rods rming the margin. The rods which form the cavity margin do not tend to the dentine parallel with the cavity wall but run off into e enamel forming an acute angle with the cavity wall. Beginng at the dento-enamel junction, (in the axial wall) we have short ds resting upon the dentine, and supported by the filling material



FIG. 12. The groove from the tooth shown in Fig. 11.

owing longer and longer as the margin is approached, all together otected by the filling material, sustaining the first rods upon ich stress can come, like a buttress.

With the axial surfaces a very different condition exists. Supe a cavity has been formed beginning at the contact point of tl mesial surface of a bicuspid and has been prepared as a simple

cavity. In preparing the cavity the occlusal dentine wall is cut in the horizontal plane. The occlusal enamel wall must be cut away at an angle of twelve to fifteen centigrades occlusally from the horizontal plane in order to reach the inclination of the enamel rods, i the dentine wall comes at the junction of the middle and occlusal thirds of the axial surface. The cavo-surface bevel protects the



FIG. 13. Enamel margins, cutting out the groove shown in Fig. 12.

rods slightly and they have their inner ends resting upon sou dentine, but they are practically unsupported; the angle of th enamel wall cannot be increased or the bevel of the cavo-surfa angle without making the edge of the filling material too thin f strength. The rods which receive the stress are supported only l the filling material, which is not sufficient; consequently we find

ractice that in such cases the axio-occlusal angle of enamel is ery apt to break out, under the force of occlusion.

The tip of this incisor shows (Fig. 10) the direction of the ods very well. Notice how their direction approaches that f the axis of the tooth as the occlusal angle is approached nd how far the angle with the surface varies from twenty-



FIG. 14. Enamel defect on the cusp shown in Fig. 11.

e centigrades. The curled and twisted condition of the ds at the tip is shown in this section and the lines of atification of the enamel or the lines of accretion are autifully shown; these are bands of pigment deposited with the ne salts and mark the lines of growth of the crown, calcification ginning at the tip of the dentine.

In considering the preparation of enamel margins we will begin with fissure cavities. This bucco lingual (Fig. 11) section of a bicuspid crown shows a deep groove with but the slightest traces of caries; it is a position however where caries is very likely to occur and when it starts such grooves as these must be cut out to their extremity whether decayed or not. Before leaving this picture notice the point of imperfect structure at the cusp where caries has occurred. The little lines are checks in the enamel caused by the grinding and show the lines in which the

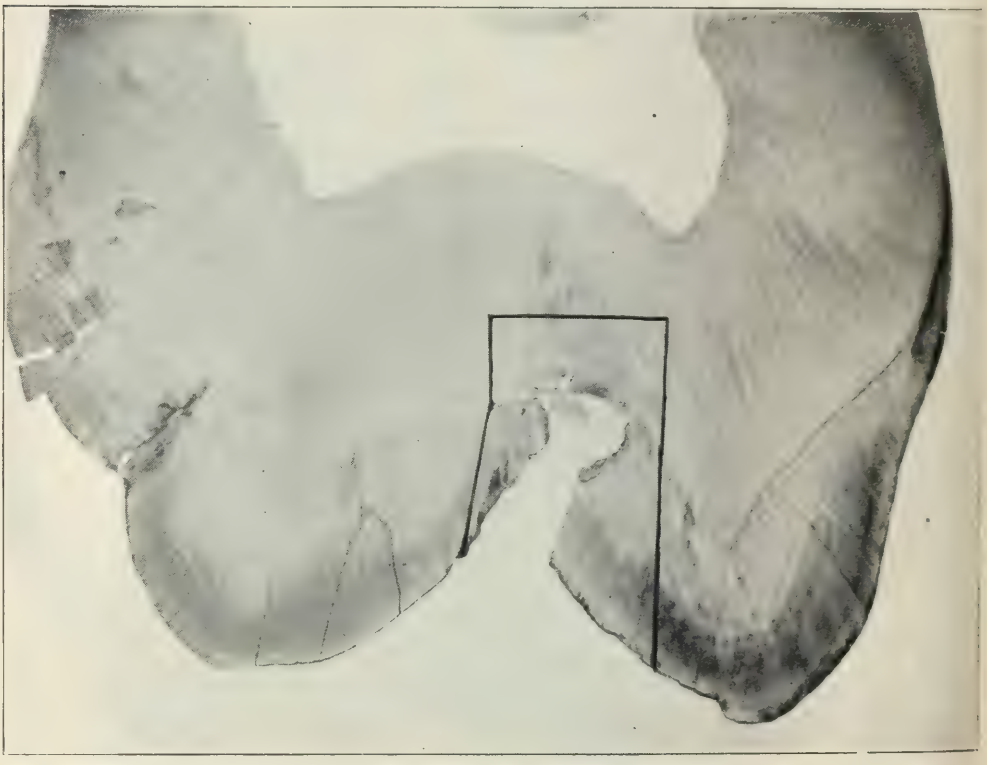


FIG. 15. Occlusal decay originating in the fissure.

enamel would cleave under the chisel. With a higher (Fig. 12) power they, as well as the rods, will show more clearly. In this view of the same fissure the enamel rods can be distinctly seen. If the groove has been opened by a small fissure drill a chisel will split the enamel away in the lines of these checks, but now the enamel wall must be planed away at the cavo-surface angle so as to make the wall in the same line as the dentine wall, that is the axial plane or at a small angle away from the axis. (Fig. 13) When this has been done the cavo-surface angle may or may

ot be beveled, as the rods are supported at that point by the horter rods which are covered bythe filling material.

Fig. 14 shows the defect on the cusp. The interprismatic sub- ance has been softened and removed to a considerable depth so hat the rods on the surface have broken out in grinding. Notice ow they are gnarled and twisted over the tip of the dentine. In



ig. 16. The fissure of Fig. 15, showing the caries of enamel and dentine.

paring a cavity in a position like this the lingual wall would be ily found about six centigrades from the axis, where as you see, l rods are almost in the axis at their outer ends, but on the cal wall the condition of the margin is not so easy to find. ling with the chisel at the margin the rods will be found short inclined lingually from the axis but extending the cavity

margin buccally, and increasing the angle of the enamel wall till it reaches near six centigrades buccally from the axial plane, the margin will be found to leave the rods in good shape if it does not bring the cavity margin too close to the point of the cusp.

The next set of illustrations show occlusal decays originating in grooves or fissures. Fig. 15 shows the crown of a molar.



FIG. 17. The trimming of the enamel wall of Fig. 16.

The enamel was complete in this section when the grinding wa begun, but a portion which was undermined has been broken ou in the grinding. Notice the extension of the decay under th enamel and also the condition in the mesio-lingual groove. higher power of the same (Fig. 16) will show the direction of th rods and the undermining of the enamel plates more clearly. I

preparing such a cavity the undermined enamel will split away very easily, the enamel rods running at an angle of eight to ten centigrades from the axis toward the groove. The enamel wall must be planed away so as to bring it into the axial plane or inclined slightly buccally from the axis, the cavo-surface bevel being cut at a slightly greater angle than the rest of the enamel wall. The



Fig. 18. Mesial enamel plate of a bicuspid, showing cleavage in the direction of the rods and an old cavity in the mesial pit.

lingual enamel wall must be cut at an angle of six centigrades from the axis or the dentine cut away farther to the lingual, and if cut at about six, the cavo-surface bevel is not necessary. Fig. 17 shows the lines of the cavity when prepared.

Turning now to the proximal sides. Fig. 18 shows the mesial

enamel plate of a superior bicuspid. The lines are checks for grinding, but they have followed very accurately the lines of the enamel rods. There was a small filling in the mesial pit. The margins were discolored and the photograph shows that caries had recurred around it. The occlusal enamel has broken away badly in the grinding. Cutting out a simple cavity in the mesial surface



FIG. 19. The same, cutting out a simple cavity.

the enamel margins would have to be cut as shown in Fig. 1 The occlusal enamel wall would have to be cut at an inclination twelve to fifteen centigrades occlusally from the horizontal plane reach the direction of the rods at this point, then beveling the cav surface angle the wall is weak, but if it is not inclined occlusally much as that, rods will be left with their inner ends cut off su

ained only by the cementing substance between them, and they ill be loosened and broken out in condensing gold upon them. he gingival wall is cut at an angle of six or less gingivally from ne horizontal plane, and then the cavo-surface angle slightly eveled.

Fig. 20 is interesting, showing two proximal decays which ow the depth to which the action of the acids has penetrated. he one at the mesial contact point, the enamel appeared perfect hen the grinding was begun, showing a slight discoloration, but

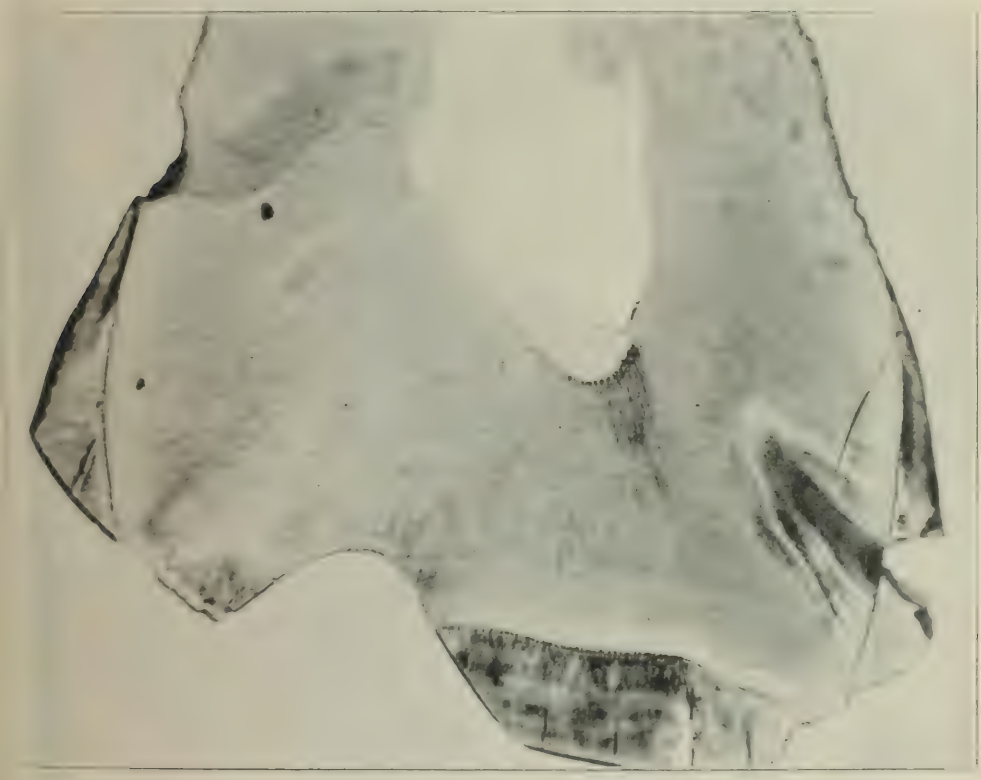


FIG. 20. Penetration of caries on proximal surfaces of a molar.

impairment of the surface. That the cementing substance was ed upon, however, is shown by the way the enamel has crum- d away at this point, not breaking out in a piece, but crumbling ay. The dark lines show the affection of the dentine at the gival line of the distal surface the decay has scarcely formed a ity the dentine has been affected all the way to the pulp cmber.

Fig. 21 shows the crown of a molar cut from buccal to lingual,

showing very imperfect fissures, and on the buccal surface a spot where a piece of enamel has broken out in grinding. This is in about the position of common buccal decays, and will show the conditions of the enamel margins. Taking a higher power of just that portion (Fig. 22), notice that at the gingival wall the rods are inclined gingivally from the horizontal plane, and at the occlusal wall they are inclined occlusally. Fig. 23 shows the cavity cut out.

Figs. 24 and 25. Similar conditions and preparation on the buccal side of the bicuspid.



FIG. 21. Molar crown in bucco-lingual section, showing defective fissures a the position for a buccal cavity.

Fig. 26 shows a section of a third molar with a large bucc cavity. The occlusal dentine wall would be cut out in the hor zontal plane, but the enamel wall must be inclined occlusally least twelve centigrades to reach the direction of the enamel ro and then the corner would be very weak, and the occl sion comes strongly on that cusp, as is shown by the abrasic (Fig. 7.)

Fig. 28 shows a pit in a lateral incisor where a cavity has be

formed ; the undermining of the enamel plates and the conditions of the margins are shown fairly well. In opening up the cavity the undermined enamel splits away with one or two strokes of a chisel. The lingual enamel wall, after cutting it away till sound dentine is reached, is cut in about the horizontal plane and the cavo-surface angle beveled at from three to six centigrades gingivally from that



FIG. 22. A portion of the buccal side of Fig. 21.

and extending back about a fifth of the thickness of the enamel wall. The occlusal enamel wall must be inclined about ten to twelve centigrades occlusally from the horizontal plane, and the cavo-surface angle beveled.

Fig. 29 shows the gingival enamel margin only and the undermining of the lingual plate and 30 the margin trimmed.



FIG. 23. Fig. 22, cutting out the cavity, showing the trimming of enamel walls

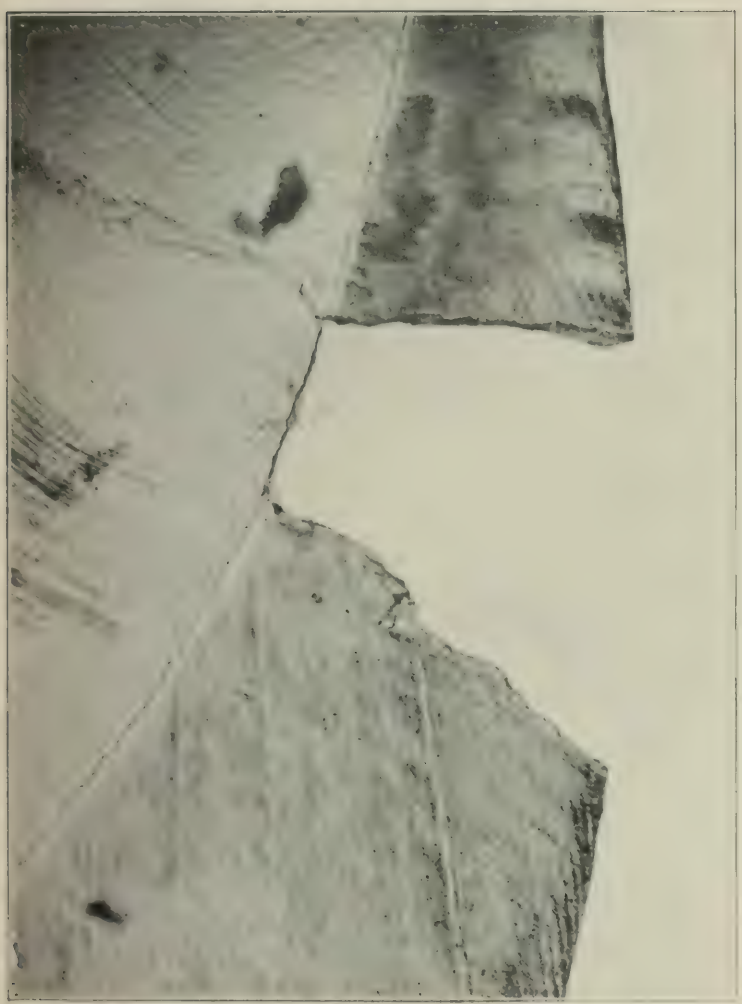


FIG. 24. Portion of the buccal enamel plate of a bicuspid.

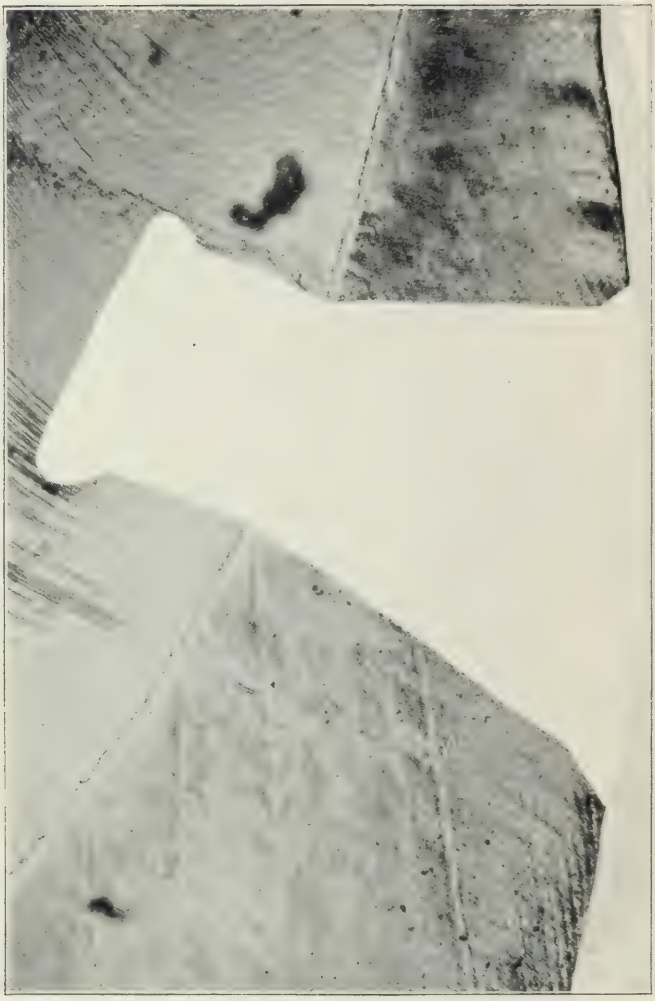


FIG. 25. The preparation of the enamel walls of Fig. 24.



FIG. 26. Bucco-lingual section of a superior third molar with extensive buccal cavity.

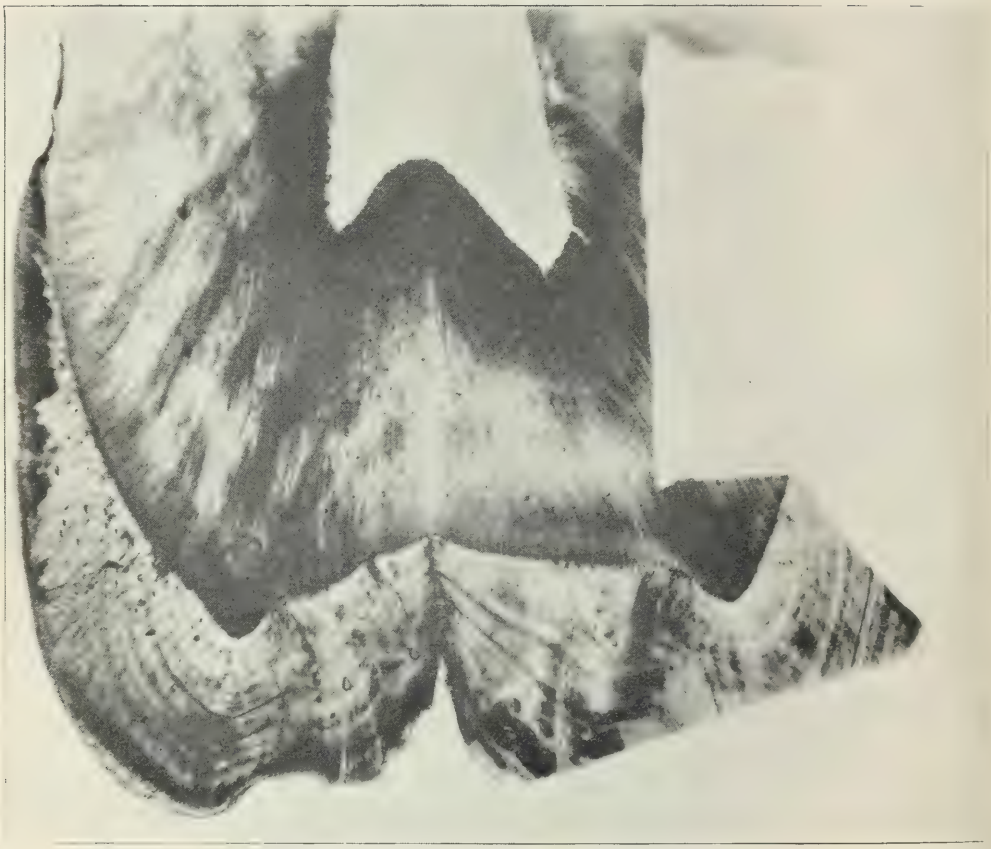


FIG. 27. An attempt to prepare the cavity shown in Fig. 26.



FIG. 28. Labio-lingual section of superior lateral incisor, showing a pit cavity.

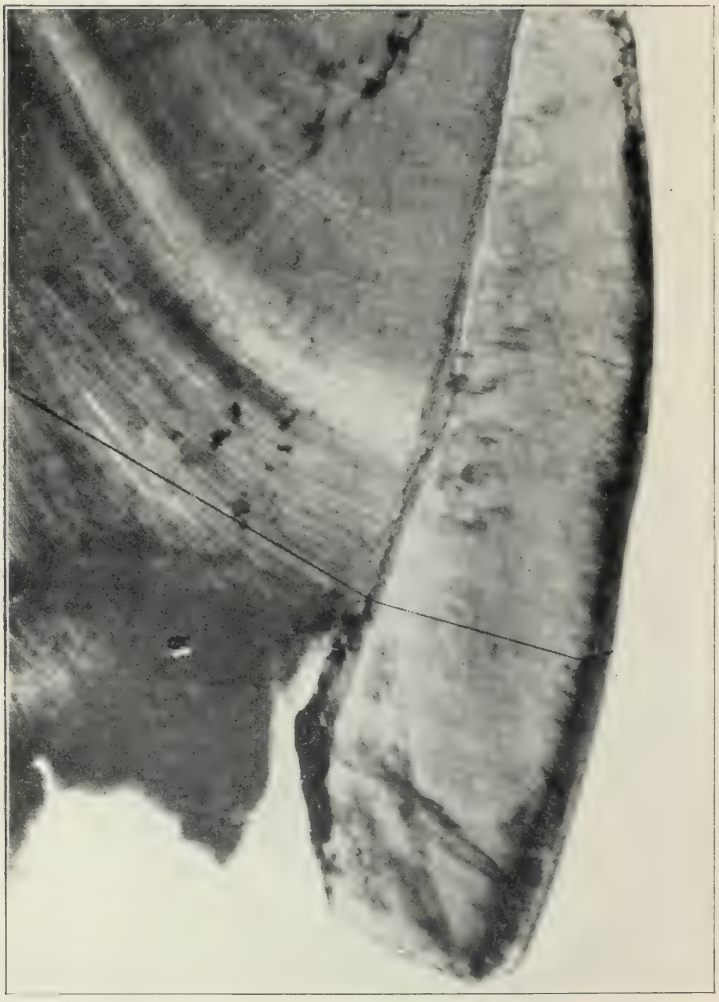


FIG. 29. Undermining of the enamel at the gingival border of the cavity shown in Fig. 28.



FIG. 30. Preparation of gingival enamel wall shown in Figs. 28-29.

No Bacteria in Carious Dentine?

By W. D. Miller, Berlin.

During the last three or four years, in which I have not been able to take any part in the discussions going on in the dental journals, I have repeatedly found views attributed to me which were anything but an expression of my own opinions. Sometimes these views have been exactly the opposite of my own, as plainly expressed in my "Microörganisms of the Human Mouth" and in various articles published in the dental journals.

I hope in the course of time to be able to review some of the work which has been done during this period and to call attention to some of the views which have been erroneously attributed to me.

At this time I wish only to refer to a question which came up at a meeting of the Odontographic Society of Chicago, reported in the Dental Review for March 15, 1899. From this report it appears that I have been represented as having stated that no bacteria were to be found in carious dentine. I am quite at a loss to understand how such a statement could have been made. In my earliest work on decay of the teeth, which was done in the microscopical laboratory of the Physiological Institute of Berlin, I adopted the method of preparing my sections which was then in use. The carious dentine, after being hardened in oil of turpentine, was imbedded in paraffine, cut on the microtome and stained in hematoxyline or alcohol carmine. In specimens thus prepared I was not able to find any bacteria; but with the advent of the freezing microtome and the basic aniline stains now employed for staining bacteria, I had no difficulty whatever in finding immense numbers of bacteria in every case. A paper containing these results was published in the *Dental Cosmos* for January, 1883. Since that time I certainly have never said that there were no bacteria to be found in carious dentine, but have constantly maintained the contrary. Four photographs of carious dentine, showing numerous bacteria of different forms, are given in my book on the microörganisms of the human mouth.

In the same report I am represented as having suggested leptothrix buccalis as the cause of decay, which I did in one of my first papers, published in the *Independent Practitioner* in 1883; but as early as 1889 in my Microörganismen der Mundhöhle (American edition 1890) I advised dropping the name leptothrix buccalis alto-

gether, since it had served only to introduce confusion, scarcely any wo authors coinciding in their views as to what leptothrix buccalis was. This fact appears very clearly in the report under considera- ion, where the expression is used. "Leptothrix buccalis or some ther cocci" which is about equivalent to saying lead pencils or some other balls, the characteristic form of the leptothrix family eing long threads,* although some species of leptothrix appear to e pleomorph.

I have done my very best to make it clear that *any* bacterium n the mouth which can produce an acid reaction in particles of ood and *any* bacterium which is capable of exerting a peptonizing r dissolving action upon the organic substance of the dentine nay take an active part in the production of the caries. Of both groups there are various representatives in the human mouth, while the majority of the mouth bacteria combine both properties.

The report further contains the inference that cocci have the ower to penetrate normal enamel. This I am inclined to seriously loubt. I have pointed out (Microörganisms, p. 168 ff.) that masses f bacteria may force their way between the prisms of the partially lecalcified enamel (see Figs. 66 and 67)‡ but I have never found hem working in advance of the acid.

Porcelain Dental Art.†

By W. H. Taggart, D. D. S., Chicago, Ill.

As I commence to collect my thoughts on the subject of this evening's paper, "Porcelain Dental Art," it seems as though it was something of a mistake to make it a written article, as the contents re really better suited to be given as a clinic.

Porcelain in crown and bridge work and in the form of inlays as come to stay. There are a great many in the profession who y it down as not being practical, and nothing but a fad, but my perience has been that this opposition comes mostly from those ho know nothing about the work practically, and have not the ility to learn a new branch of dentistry, or else they base their position on failures that came from faulty construction, and are t broad enough to admit that such objections are not in keeping

*Leptothrix—a thin (fine) hair.

†Read before the Chicago Dental Society.

‡Loc. cit.

with a progressive spirit, and the same trivial reasons for not adopting the porcelain in dental art, if applied to other processes in dentistry, would stop all progress. Do we consider it an objection to gold as a filling material because we see so many failures of our own and others in the use of this best of all filling materials? Do we cry down the saving of devitalized teeth because some one ignores all known and unknown principles, and fills such teeth without following any of the scientific and modern methods?

Every day I see cases that are so utterly devoid of principles, both scientifically and morally, that I am surprised that men can shake hands with themselves and say they are dentists. Those of us who have been in the profession long enough to remember the advent of crown and bridge work, well remember the vast number of failures that stared us in the face, and these coming, too, from the hands of the best workmen. Why? Because it was a new line of work, and we did not know the underlying principles necessary to obtain lasting results. What if we had stopped there, and all these years had nursed our grief, and mourned over the untimely death of our first effort? Would we to-day have been able to give to suffering humanity such thoroughly artistic and practical results—results that place us in the very front ranks as a progressive and humanitarian profession?

Coming back to the practical side of the porcelain crown and bridge work, I will relate my experience. I have had quite a few failures with porcelain bridges, but without exception every one was a failure from faulty construction, either in the manipulation of the material, or in faulty underlying principles. Nearly every break that came started at the junction of the dummies and the abutments. It seemed as though the continued torsion made it break at this point, and by strengthening the weak part I eliminated the weakest point. I will explain later how this is done.

Porcelain is only strong in bulky pieces; thin attenuated edges are to be carefully avoided, and the learning this *has* added very materially to the strength and beauty of the work. In constructing a bridge, I used to allow the square metal bar to run through the center of the porcelain, as in Fig. 1, which of course only weakened the porcelain, because it reduced the bulk of it, and the porcelain was only as strong as a piece the size from the l

o the surface, which you will readily see is not one-half as bulky
is in Fig. 2, where the bar is round and placed well up in the
ngle where the facing joins the cap or saddle. Now, in reference
o the square and round bar, Figs. 3 and 4, the round bar should
e used as it gives much less opportunity for cleavage to start, as
orcelain is much more apt to crack starting from an angle than it
s from a round corner. This principle followed out took away
nother weak point.

Now, by referring to Figs. 5 and 6, you will see how the weak
oint that I spoke of as being the first part to give way is strengthned. This has been made possible by the use of the high fusing
wenty-five per cent platinum and gold solder, introduced to us by
r. Ames; and I should like to give this prolific young man all the
redit for this great help, but we find that others had used it
efore he did, and kept it to themselves, and as he gave it to us
eely, he should have the credit, because it was as original as far
s he knew as though it had never been thought of before. Refer-



G. 1. FIG. 2. FIGS. 3-4.

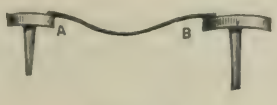


FIG. 5.



FIG. 6.

ng to Fig. 5, the points at *a* and *b* which represent where the
ddle joins the caps were the first ones to give way on account
the continual torsion; now, by flowing that angle full of the
enty-five per cent platinum and gold solder, as is represented
Fig. 6, at *c* and *d*, we get a strength many times greater. This
s impossible to obtain when we used pure gold solder, because
e gold would all be absorbed by the platinum frame. Pure gold
der never added one particle of strength to a bridge, for by the
ne the porcelain is baked, there is no gold in sight, and the
ace that it occupied is nothing but an air hole in the porcelain;
hereas every particle of the high fusing solder adds strength and
ffness, and melting at a temperature many degrees above the
sing point of the porcelain, it holds its own and eliminates
other one of the weak points.

I will now refer to the form to be given to the root at the gum
e in order to get the very artistic results which I was never
e to obtain with a Richmond porcelain faced gold crown. With

that crown, in order to keep the gold band from showing, the roo was cut considerably below the gum on the labial side; this i not necessary with the banded porcelain crown, as the band is from the labial side, entirely covered with porcelain. The prope way to do this is to carefully grind the facing so as to cover thi labial face of the platinum band clear to its edge, and not try t do it by baking a thin layer of porcelain on the band, as this thi layer of porcelain is quite liable to chip off and apparently is neve real dense, good porcelain, and at that part of the tooth—the nec —we want the color just right or it looks as though some ligh colored debris had lodged there. None of these drawbacks d we have when the facing is ground to cover the band. We ge strength at that point because we have the good, true porcelai of the facing backed up by new porcelain, which is worked i between the facing and the band; we get a nicely rounded, blun edge to the labial face of the band, which gives the much desire

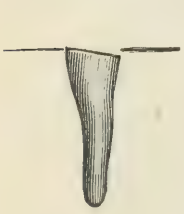


Fig. 7.

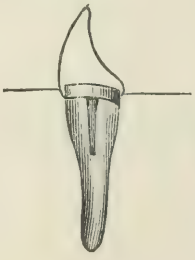


Fig. 8.

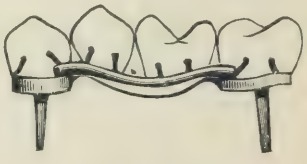


Fig. 9.

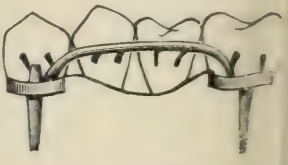


Fig. 10.

festooned look to the gum; and, lastly, we get a gradual grad tion of color which is so desirable, and impossible to obtain in an other way. I pass you a tooth properly ground to show this effec From the palatine face of the root I grind it pretty well under t gum (Fig. 7,) and do not cover the band with porcelain except ju a little over the edge of the band (Fig. 8,) and make this a bl edge which presses hard against the gum and makes a margin fro the palatine side which is nonirritating and beautiful. Fig. shows the proper and Fig. 10 the improper position for t bar. Fig. 11 shows the bar, saddle and teeth soldered wi twenty-five per cent platinum solder. Fig. 12, finished bridge.

Is there any objection to a saddle bridge? If properly co structed, no; if improperly constructed, yes. A saddle cannot made wholly free from a die and counterdie. The die and counte die must be made accurately from a good impression, and aft swaging the saddle solder it to the abutments with twenty-five p

ent platinum solder, and then do the balance of the fitting in the mouth. At this stage of the work you will be very much surprised t the inaccuracy of your swaged saddle; but by holding the caps olidly to place in the mouth, and with a firm hand and large ball urnisher you can make that saddle fit like a glove. Press it own just hard enough to make a white line at the margin, but ot enough to cut into the tissues. Some part will, on account of ne difference in density of the gum tissue, be pressed down a xteenth of an inch before you get it to press evenly on all parts, hich shows if this care was not taken, and we relied on the accu- acy of the die, there would be places where food could lodge nder the saddle; and if it once commenced to do this it would oon become offensive. A saddle properly constructed and in a ean mouth is not as uncleanly as the so-called self cleansing aces of other construction.

As to the cleanliness of this saddle bridge, I feel a good deal

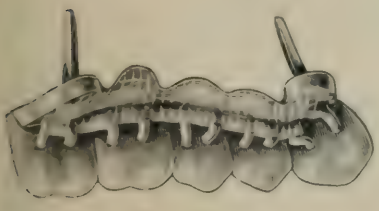


FIG. 11.



FIG. 12.

e the man who said if water was clear and cold, and had no bad ste or smell, he did not care where it came from, and I feel if e gum line along this saddle is free from irritation, and it has no d taste or odor to the patient, I am willing to take chances on ything that is under it.

My idea in this paper has not been to go into the detailed nstruction of crowns and bridges, but to present a few of the derlying principles necessary to success, and by giving a hope- outlook and encouraging words to those about to be discour- ed, I may do the good I am aiming at. I have lots of confidence porcelain myself, and when I tell you that it has been four years ce I have made a gold crown or a gold bridge of any kind in mouth, you can see I have confidence in the process. A fail- to say something about setting porcelain crowns and bridges h gutta-percha would be to ignore one of the very best of the derlying principles necessary to success.

I have never known a saddle bridge to be set with cement but what more or less of the cement would be forced under the saddle, and no possible way to get it out, if the saddle fits as it should; consequently, along most of the saddle there would be instead of the nonirritating and smooth platinum, a layer of cement which shortly acts as an irritant, and the saddle principle would be condemned. With the saddle bridge set with gutta-percha there would be no such condition, and the hundredfold advantage of being able to take the bridge off in ten minutes to make any necessary repairs, places this process of anchoring a saddle bridge so much in advance of the other method as not to be mentioned in comparison. Another advantage the gutta-percha possesses is that it seems to cushion the blow, if I may use the expression. There is not that rigid, metallic connection between bridge and roots, but a more cushioned, yielding condition, which I feel takes fully fifty per cent of the strain off of the porcelain, and as this mode of anchoring seems to hold the bridge in place, as well as the cement, I can see no reason why it should not be almost universally adopted.

I have given several clinics at different times showing the details of the process, and will say nothing more but to praise it in the highest terms.

A paper on porcelain dental art would not be complete without alluding to the revived inlay process. I say revived because it has come and gone a number of times during my day and each time it has been abandoned, not, I think, because the principle is wrong, but because it requires a high grade of skill and is not a slovenly man's work by any means. However, as the skill in dentistry is of a higher order than at any previous period I feel and hope that dentists will not abandon the process, because it is so artistic and useful in the places it is best suited for, and while it must necessarily cost the patient from two to four times as much as a gold filling, you will find quite a few patients who are glad to have it done, and I assure you you will feel yourself much better dentist, and more worthy to be classed in the ranks of the progressive.

In regard to the porcelain to be used for this purpose, there seems to be a great diversity of opinion. Some advocate a high fusing, and some a low fusing; but one thing is quite well fixed in my mind, and that is that a porcelain that is suited for inl

work is not very well suited for crowns; for in inlay work we have a matrix, and really want a porcelain that will run into this matrix, and not draw away from the sides, while in crown or bridge work we want a porcelain that will stand up, and not run so as to obliterate the cusps and form. I have made five little cups, all the same size, and packed each one of them as carefully and densely as possible, and baked them carefully, and I think these will demonstrate which one is best suited. I have used Close, Ash's high fusing, Consolidated Dental Company's, Brewster's and Jenkins' porcelain, and you will notice that while all the others shrink and draw away from the sides of the matrix, the Jenkins' body simply lays right down in its matrix without drawing away from the sides a particle. From this ocular demonstration you can draw your own conclusion.

Bacteriological Investigation of Pulp Gangrene.*

By Geo. W. Cook, D. D. S., Chicago, Ill.

For want of a more accurate term, I have used the word gangrene to designate the conditions found in pulp canals in which the pulp tissue is dead and undergoing putrefactive changes. In surgery, gangrene means the death of tissue *en masse*, instead of molecular death. Whether this is true or not respecting the death of the pulp, we know that when opened into the pulp is dead, so it differs little whether it has undergone death *en masse* as in true gangrene or has undergone molecular death as in ordinary inflammatory processes.

The immediate cause of gangrene, whether the process is induced by inflammation or otherwise, may be said to be any agent which is capable of destroying the vitality of the tissues, or cutting off their nutrient supply. The agents capable of inducing one or both of these conditions are very numerous. But as in inflammatory processes, practically, we have but one cause, viz., bacteria. To be sure the vitality of the tissues may be lowered by many agencies, so that the bacteria may gain an entrance, but having once gained an entrance into injured tissue, or tissue of low vitality, inflammatory processes are at once established which may result in resolution, or, if carried further, result in death of the parts, gangrene. So in considering the cause of pulp gangrene, we

*Read before the Illinois State Dental Society.

must consider it from a bacteriological standpoint, that is, study its bacteriological cause.

Before going further with the main question, it might be well for us to consider the working of bacteria in a general way. In nature, all proteid substances, which constitute the chemical bases of all living matter, as soon as the life phenomena ceases, readily breaks up into simple inorganic compounds or elements from which it was formed, viz., N, H, O, together with certain metals. The energy necessary for the building up of the complex proteid molecule as it exists in plant and animal life, is primarily derived from the heat of the sun, and is purely a synthetic process. The opposite chemical change which takes place in dead nitrogenous matter is analytic, that is, the complex molecules are broken up into a number of simple molecules as NH, CO and HO. This process is sometimes called oxidation and implies the union of oxygen with the decomposition products as they are formed. The carbon unites with oxygen to form CO and the hydrogen unites with oxygen to form HO. In nature this process is known as putrefaction, and is simply the series of changes gone through by the complex nitrogenous molecule in its passage to the inorganic state, or as it exists in nature, viz., NH, CO and HO. In putrefaction it is known that bacteria cause the decomposition, and the products subsequently unite with oxygen.

Doing this work we have a class of microörganisms generally called putrefactive bacteria. They are saphrophites, that is, they live best on dead nitrogenous matter, causing its decomposition.

During this process of decomposition of proteid matter by bacteria there was necessarily many intermediate products formed among which are certain crystalline bodies of a basic character called "ptomaines." These bodies contain nitrogen and chemically resemble the vegetable alkaloids. Some are poisonous, but according to Vaughan and others, by far the greater number are inert. It has been commonly thought, and even taught, that disease symptoms were due to the formation of ptomaines in the body of bacteria, and that all disease exciting germs formed its characteristic "ptomaine." This is true only in part. Ptomaines are formed by putrefactive bacteria, and as these bacteria are found in many abscesses and suppurating wounds, etc., breaking up dead tissues, it often happens that their poisonous products are absorbed and give rise to certain symptoms and conditions as high tempera

ture, headache, and, if absorption continues, may end in collapse and death. But ptomaines are not the cause of any special set of symptoms, but simply act as poisons, just as strychnine or morphine act as poisons. But we have a second class of microörganisms which are capable of invading living tissues and lead parasitic lives. This class includes all pathogenic bacteria, and, as a rule, they are not capable of inducing putrefaction. These bacteria elaborate poisons very different from the putrefactive "ptomaines." Their products are not crystalline, not basic bodies and chemically have no relation to the alkaloids. They are supposed to be albuminous bodies, and are commonly called toxins or toxalbumins. A good example of these bodies is snake venom. Bacteria causing certain diseases, as diphtheria, tetanus, etc., elaborate their own characteristic toxin which causes characteristic disease symptoms. The point we wish to make clear is that ptomaines are not the products of pathogenic bacteria and can in no sense of the word be looked upon as the cause of any disease.

It might be well just here to state briefly how bacteria after having gained an entrance into the pulp canal, set up their destructive work which if continued, results in the death of the part.

Bacteria. The question arises in this connection why it is that certain bacteria which are very frequently found in the saliva leading to all appearances a saprophtic or nonpathogenic life suddenly change to a parasitic or pathogenic life producing various diseased conditions. The only explanation we can offer is that set forth by Hueper. He advances the idea that there are certain "disease stimuli" or liberating impulses as they are called in the inorganic sciences. In normal life processes we may speak of the particular stimuli that evoke disease as excitants of disease, just as Liebig spoke of the excitants of fermentation.

Through a depression of the physiologic organization and consequent lowering of the resistance, normal physiologic stimuli may become disease stimuli, or the organization and resistance remaining the same, a normal stimulus may become more intense and be converted into a disease stimulus, in other words, the stimulus may come into play only quantatively.

This theory explains very nicely how bacteria may live in the saliva purely as saprophites, exerting a stimulation of the tissues of the mouth corresponding to the resistance of the tissue; but lower the vitality of the tissue and the bacteria at once become a

disease stimulus and may set up all sorts of pathologic conditions, or the tissues may remain the same, and the same condition may increase the activity of the bacteria, and they at once pass from a normal physiologic stimulus to a disease stimulus and become disease excitants, just as the yeast plant is an excitant of fermentation.

Taking up the consideration of the bacteria found in the mouth, and which at times seem to be active factors in the causation of certain diseases of the mouth and especially of the teeth, we must confess they are very numerous; so numerous, it is very difficult to determine whether one kind of bacteria is involved in the causation of a certain pathological condition or many kinds. In pulp gangrene or in pyorrhœa alveolaris the question naturally arises, what microörganisms are the main factors in producing these conditions ? Here it is exceedingly difficult to determine whether one or many are involved in the work of first acting as a disease stimulus upon tissue of low vitality, and afterward of disintegrating the tissue causing putrefaction. A very plausible explanation is that some one form of bacteria first takes on the function of a disease stimulus causing an irritation of the tissues which tend to lower the vitality to such a degree that the process soon becomes a mixed infection ending in the death of the tissues, followed by putrefaction.

Speaking more particularly of pulp gangrene, it is well in this connection to stop and consider the different kinds of bacteria which are found in this morbid condition. While many of the ordinary putrefactive bacteria are found in dead pulps, I wish to call your attention to a microörganism already described by Arkovy, of the University of Budapest, who has been working some very interesting facts connected with the bacteriology of caries of teeth. He has described a microörganism which he claims is so constant in pulp canals as to justify the name bacillus gangrene pulpæ. He claims to have found this bacillus in great majority of cases of pulp gangrene and ascribes to it the cause of pulp gangrene. About two years ago I isolated this same germ thirty-four times from pulp canals in which the pulp was gangrenous and undergoing liquefaction. I experimented considerably with it at that time, inoculating pulps of teeth, and settled to my own satisfaction that although the bacillus under normal conditions lived a saprophytic life in the mouth, under conditions of lowered vitality of the pulps it could become a disease stimulus and excite pulp gangrene.

Investigators along this line have described quite a number of germs, all of which seem to be able at times to cause disease of the pulp. (1) The proteus vulgaris described by Heiner. (2) The bacillus proteus littales described by Babes. (3) A bacillus found in putric bronchitis described by Barnabei and Babes, and (4) Babes has described the bacillus septicus ulna, which he found in a fatal case of ulceration. While all of these have been found in pulp gangrene, the investigations are not sufficient to prove their identity as a cause of pulp gangrene. Biondi has also described a number of germs, but further investigation does not prove their connection with any disease of the teeth.

During the past two or three months I have made a number of experiments with the bacillus of pulp gangrene first described by Arkovy, and which he claims would produce pulp gangrene, but would not form pus—the pus formation which accompanies pulp gangrene being due to a mixed infection. I made eight inoculations of this germ into pulp canals, and in seven of the cases I found the germ in pure culture. But differing from Arkovy, I found pus in every case. In six other cases which were inoculated with pure culture, I found contaminated with the micrococcus gingivæ pyogenes, which is a microörganism of quite pronounced pathogenic powers. Three of the cases were suffering with a gingivitis of a very pronounced type.

I will give the analysis of forty cases, all of which were opened into under as near antiseptic conditions as possible :

Staphylococcus pyogenes aureus, I found nine times. Staphylococcus pyogenes albus was found seven times. Bacillus gangrenous pulpæ was present thirty-four times. Streptococcus pyogenes was present thirteen times out of forty. Bacillus pyocyanus, twice. Sacina lutea, six times. Bacillus dental viridaus, three. Bacillus pyogenes Fetoedus, twice. Bacillus teneus sputigenus, three times. Bacillus ulna (Vignal's) once.

I found a tetrad form of coccus which was pathogenic.

About the only conclusion we can draw from the work done thus far on the bacteriological cause of pulp gangrene is that no one microörganism is wholly concerned in the causation of the disease. It seems that a number are capable of producing death of the pulp. In this respect pulp gangrene is similar to various other diseases due to bacteria, but to no one particular bacteria or microörganism, any one of a number being able to act as a disease stimulus exiting the pathological condition.

Modern Manipulative Methods in Crown and Bridge Work.*

By H. J. Goslee, D. D. S., Chicago, Ill.

While the application of crown and bridge work is more or less modern, and has since its inception kept well in line with all collateral pursuits in the advancement of the dental prosthetist of to-day, yet, with all the merited recognition and progress, distinction and advancement, there is yet much room for improvement, many opportunities for a broader general observation, which would result in a more intelligent and judicious application of principles, combined with a more careful consideration of manipulative details.

The success of any work, or the application of any general principles, depends largely upon an intelligent comprehension of the technique of detail underlying same. Granting, mayhap, that our mediæval ancestors delved into the mysteries of crown and bridge work to some extent, it is, nevertheless, within the happy province of the present generation of dentists to mark its real advent, and recognize the notably rapid strides of advancement toward perfection which are the result of a natural progression amid the potent influences of modern environments.

In the face of this acknowledged advancement, and in view of the superabundance of literary productions in the past few years upon kindred subjects, can my audacity be doubted in acquiescing in the invitation of your committee to present something to this body on the subject?

Indeed, *enthusiasm* is about the only excuse I have to offer for the fact of my bending to those persuasive influences, for I am sure that you will not deprecate my sincerity when I say that it requires more than a pensive indulgence now to present to any body of reading, scientific men, anything new, original or startling, or even that which will be received with more than a passive concern, of a *practical* nature.

Such is not the purpose of this paper, yet permit me to say that since the advent of crown and bridge work—that which was so soon destined to occupy a place of such prominence in our ranks—that which was to merge or weld together in strong bonds of union the two respective departments of practical dentistry, but little progress has seemingly been made by a great many along the lines previously mentioned.

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*Read before the Illinois State Dental Society, May 12, 1899.

This may appeal to some as being a somewhat rash assertion, and yet we have said that there is still room for improvement, and most of us, I believe, will acknowledge that we have failures.

To consider the cause of these failures it is necessary that we resort to comparison and criticism. To overcome them it is necessary that we rely not so much upon our own intuitive genius, or to what some one else may tell us, but more to thought and study of cause and remedy.

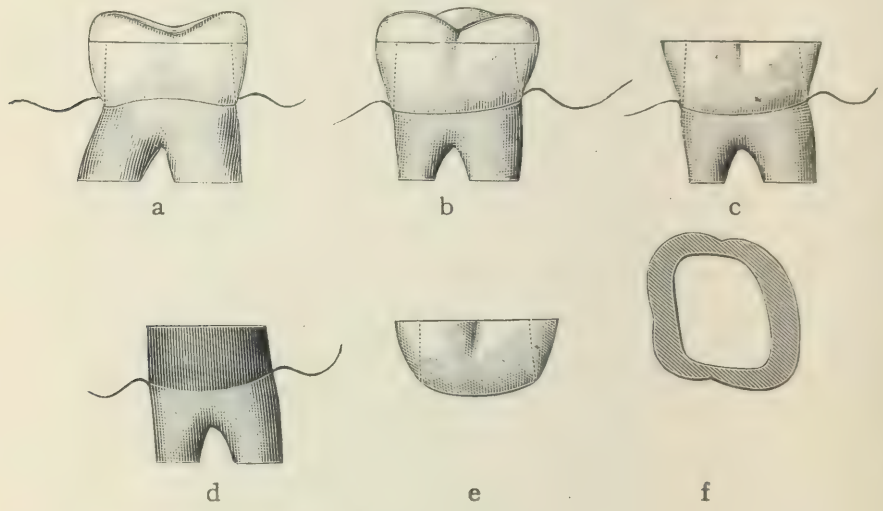
Take, for instance, first of all, the preparation of roots for crowns. How many cases do we see where crowns are worn bearing all the earmarks of faulty root preparation? Is this due to a lack of knowledge of the requirements, or to the manipulative procedure? Neither, I think, but mostly to simple indifference or negligence. It is not an exaggeration to say that at least seven out of every ten roots supporting crowns with bands show every symptom of gingival inflammation or peridental irritation; yet the advantages of a band, which are to add stability to the crown, to prevent a possible fracture of the root under the stress imposed, the immunity from decay, and the washing away of the cement by so hermetically sealing as to exclude secretions, are undisputed and prominent factors to permanent success.

The common cause of this condition may sometimes be due to the electro-chemical theory (?), but, to my mind, can invariably be attributed to the *mechanical* theory, or the irritating influence of a poorly fitting band, due to imperfect root preparation. What a multitude of sins these gingival borders of the gums do sometimes cover. I should like to see a skiagraph of the relation of many of my own crowns to the roots supporting them. For this reason I have long advocated and believed that it is seldom possible to subject an ordinary tooth with a vital pulp to the proper preparation without first devitalizing, and have contended that in denuding the enamel and encasing the tooth inside of a metal covering, with an intervening layer of cement, an unnatural condition was established, so far as external influences upon nerve and blood supply were concerned; and that the irritating influence of oxyphosphate of zinc to the denuded surface, or the possible presence of metallic arsenic in the cements were also destructive to the ultimate vitality. Be that as it may, it is almost impossible to properly shape a tooth containing a vital pulp for the reception of an accurately fitting band, as I shall herewith illustrate with

models specially prepared. You will see that if a tooth contains a normal pulp and is of normal formation, how difficult it will be to so render its occlusal dimensions that they may at no point exceed those at the cervix, which constitutes the necessary preparation. (Fig. 1.)

Moreover, we are told, and, indeed, clinical experience teaches us, that the function of the pulp is at an end—so far as usefulness is concerned—when development is reached, which is borne out in nature by the gradual atrophy of this tissue in old age, yet the tooth remains, assuming its normal duties and apparent functional activity. While some abuse could be given this theory in cases of constricted crown formation, very young or very old patients,

FIG. 1.



KEY TO FIG. 1.

a Showing approximal view of typical lower molar. b Buccal view. c Buccal view with occlusal surface sacrificed. d Showing necessary diminution of crown dimensions. e Showing amount of tooth structure removed buccal view. f Showing thickness of tooth structure sacrificed at occlusal edge

etc., yet if the same so facilitates the root preparation as to render possible a good, close fitting band, we are warranted in so doing, irrespective of the probable death from the other influences mentioned, and I feel frank to say fewer failures by far and more comfort to our patients would result.

Root preparation. Since we lay so much stress on the importance of root preparation, which forms the foundation of our work, it can perhaps be best and most intelligently considered by subdividing it into requirements and classification.

Requirements. The requirements can be divided into three general essentials, namely: 1. Treatment and filling of canals. 2. Restoration of broken down walls. 3. Diminution of crown dimensions.

The treatment and filling of the canals should always precede the root preparation because of the necessity for the application of the rubber dam, without which the success of the operation is materially affected.

The restoration of badly decayed or broken down walls is next necessary, in order that the continuity of the root may be restored to facilitate the fitting of the band and prevent the possible fracture of the root in preparing it by supporting the remaining walls, and the probability of subsequent decay by leaving a pocket. The diminution of the crown dimensions simply means a paralleling of the walls sufficient to admit of a close fit at the constricted portion about the gingival border of gum.

Classification. Following upon the requirements comes a classification of the various phases of root preparation, which is divided into three general classes: 1. Preparation of root for shell or telescope crown. 2. Preparation of root for porcelain face crown with band. 3. Preparation of root for porcelain face crown without band.

Under the first class we find probably the most difficult operations because of the advantage and desire for leaving the crown as long as the occlusion will permit, which, of course, leaves the enamel more intact, dense, and difficult to remove. It is right here that considerable attention should be devoted to the restoration of broken down walls when extending to or below the gum line, and this can probably be best accomplished by first carefully preparing retention and margins, then fitting a thin band matrix around the root so shaped as to make the artificial restoration parallel, to save further preparation there, then by varnishing or oiling the interior of the matrix amalgam can be used to good advantage in reproducing the continuity, and the matrix allowed to remain in position until amalgam hardens, when it can be easily removed because the oil or varnish prevents amalgamation with it.

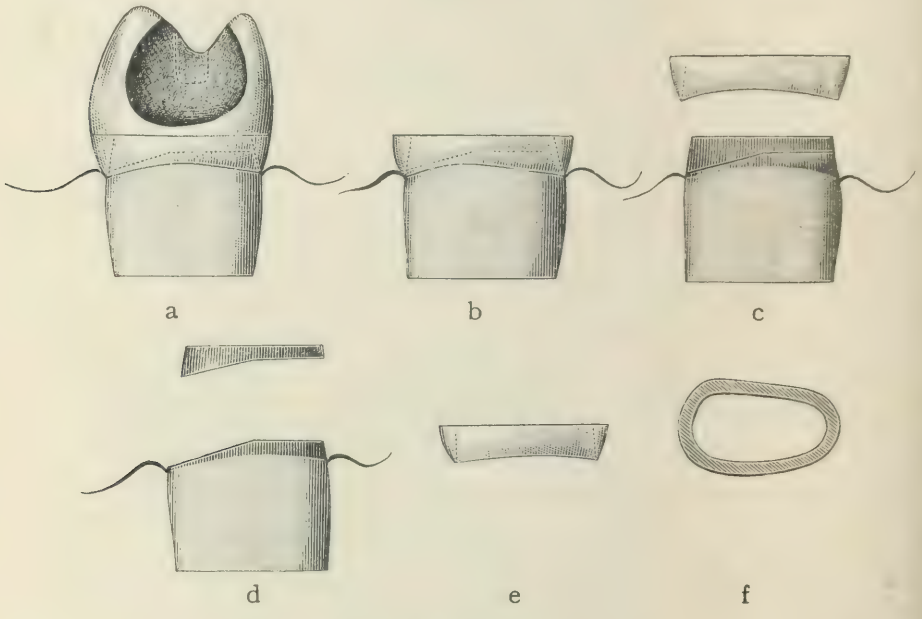
After the matrix has been removed, the buccal and lingual walls can be easily reduced to a parallel line with a thin edge carborundum stone, which when revolving against the root should be carried upward and downward upon the surface so as to prevent

the formation of a shoulder at the gum line. The approximal surfaces can then best be favorably prepared by using a very small fissure bur inserted into interproximal space at right angles with the root, and brought occlusally with some little force against the surface of root.

When a root stands alone the carborundum stone will answer for the distal surface, but the bur is better adapted to the mesial, if properly used.

The second class of roots—those for porcelain face crowns with a band, for either gold or porcelain work—are quite as easy of preparation if precautions are observed, and refer mostly to the

FIG. 2.



KEY TO FIG. 2.

a Showing typical upper bicuspid. b After crown has been sacrificed at the proper line. c Showing necessary preparation of remaining portion of the root. d Showing further preparation after band has been fitted. e Approximal views of thickness of enamel remaining after crown has been excised. f Occlusal view of this remaining enamel edge.

ten anterior teeth. After canal has been filled the remaining portion of the crown should be excised evenly on a line so as to leave the root about one-sixteenth of an inch longer than the gum. If the excising forceps are used, avoid a possible fracture rootwise by first cutting through the enamel at the desired point with thin edge stone on both labial and lingual side. The enamel can be then quite easily removed with the cleavers and the approxima

surfaces made smooth and free of obstruction by passing the small fissure bur through the interproximal spaces. The root is purposely left at least one-sixteenth inch long until the peripheral preparation is completed, which very materially facilitates not only the removal of enamel, but the securing of an accurate measurement, and particularly the fitting of the band, *because the root here remains to shape and guide the band* as it is pressed into place. The band should be trimmed so as to pass just beneath the gum and a uniform distance at all points. Make sure that it fits closely to the root and does not encroach upon the peridental membrane. Then remove and trim away so that when readjusted it is buried on the labial or buccal surfaces and visible only about half a line on the lingual. Then, and not until then, the root is ground down even with the band. If these precautions are observed, the brutal and barbarous practice of driving or hammering bands into place is entirely unnecessary, as they can be easily carried into position by slight pressure with a small piece of wood (preferably), and should fit tighter as they pass rootwise. (Fig. 2.)

The third class of roots are those for crowns without bands. Here, of course, the removal of the enamel or peripheral preparation is unnecessary, but whatever should be the surface of the face of such a root, whether it be flat, beveled, or concaved by process of decay, the floor or base for the crown should fit it accurately. If this cannot be accomplished by burnishing the material used for same into close adaptation, gutta-percha impressions should be taken, from which fusible alloy dies can be made and the adaptation secured by swaging. A crown without a band is often indicated in very young and very old patients, in extensively decayed roots, in very crowded arches, and in roots loosened by disease of surrounding tissues, and can be made with bright prospects of permanence if closely adapted, so as to prevent the penetration of secretions between the joint and the subsequent disintegration of tooth structure.

Having said that the mission or purport of this paper was to compare and criticise, let us pass from the consideration of root preparation to a few of the various common practices which have more or less to do with the principles, practicability and success of this work, in a general way.

Open face crowns. Undoubtedly one of the greatest sources of failures, one of the most frequent at least, is the application

and construction of these so-called slipper, skeleton or open face crowns, to serve the purpose of a pier or an abutment or anchorage for bridges. So much has been said of these infamous affairs that it seems neither necessary nor consistent to employ even the time to condemn them, yet many will persist in using them.

The question of sacrificing a normal or slightly decayed tooth crown for the purpose of replacing it by artificial means as an anchorage for bridges, is truly a most important one, and well worthy of mature thought, deliberation and study; and yet since it is now within the province of the skillful operator to destroy that crown, and so replace it as to make it serve the purpose both practically and artistically, every purpose for which it was intended with even perhaps an occasional improvement upon nature, I think that where the lost or missing teeth are of sufficient importance to warrant the insertion of a permanent stationary bridge we are almost invariably justified in sacrificing such a crown. If skillfully done, we are assured of at least a fair degree of success and permanence in our operation.

I will venture to say that more beautiful, natural crowns of teeth have been sacrificed by the poor fitting and injudicious application of these same open faced crowns than have purposely been destroyed to be replaced by a well and properly made artificial substitute.

When they are used the crown of the tooth carrying them is only *saved to be lost* subsequently, because of their ill adaptation for to perfectly adapt them means usually to so distort the natural crown that its appearance will never again be as even nature intended it.

If such a crown is ever applicable, it is only on such teeth as those whose naturally constructed crowns make them favorable subjects, such, for instance, as may be found in the lower anterior teeth; but they are at best but *bands, and band bridge work is not success*, and to it alone can be attributed a marvelous per cent of the failures which have occurred in bridge work.

Backing porcelain facings. Among other one-time difficulties which have been a source of great trouble with many and which has but lately been reduced to a minimum, or overcome entirely is the backing of porcelain facings, so that they may be properly supported and sufficiently protected to withstand the ravages of the force of mastication.

For a considerable time apparently no effort was made to accomplish anything but the simple retention of the facings in their proper relation, with the result that the breaking away from their attachment was by no means an infrequent occurrence.

While the pins are the sole retaining influence, precautions must be observed to prevent their acting as a fulcrum against applied force to the exposed incisal edges. This can be easily accomplished by so protecting that edge with a rigid, nonyielding covering as to relieve the porcelain from the possibility of strain.

The backing, then, is a matter of no small consequence. It should first be perfectly and closely adapted to the surface of the porcelain, and then sufficiently reinforced from the pins to the occlusal edge to withstand force without changing its shape when devoid of even the presence of the facing in position to sustain it.

The method I now give preference to is to first bevel the cutting edge half way to the pins, until you have produced a smooth sharp edge, then burnish closely 34 ga. pure gold to the surface of facing, allowing a slight surplus around edges; over this adapt 29 or 30 ga. plate gold, 22 k., from and around the pins to the incisal edge, with small surplus there; then remove and unite these with 20 k. solder. The double backing over parts subjected to stress together with the intervening solder gives a closely adapted yet stiff and rigid backing, which is now placed upon facing, attached securely and finished down along the edges. In finishing the incisal edge the file should be passed on a parallel line with the face of porcelain which, instead of feathering the backing down thin here, leaves it the full thickness. It can then be rounded off so as to be practically invisible and yet longer than the edge of porcelain. Care should be exercised to avoid overhanging edges, which invariably result in fractures due to impingement upon the contraction of the solder. The finishing of the backing should be *completed* before soldering to avoid this possibility, as no change will take place in its form during the process of soldering, which might occur if this reinforcement was made of solder alone. With this care in manipulative procedure the inevitable result is apparent, irrespective of whether the facings possess the longitudinal or crosswise pins. The latter, however, are the strongest when they can be adapted without too much grinding.

Soldering facings without investing. This is a very useful and time-saving procedure oftentimes in cases where the facing may

be retained in its proper relation without an investment, and ca be accomplished without danger of fracture if the porcelain placed upon a charcoal block or asbestos pad before applyin heat. This so modifies the volume of heat at first that it is n more readily absorbed by the pins than by the porcelain, whic enables both substances to expand together. Where the facin is placed directly into the heat from a Bunsen burner, however, th danger is increased, because the metal pins are a better conducto and absorb and expand under the influence much quicker than th porcelain.

Assembling anterior facings. This portion of bridge construc tion is quite often done in more or less of a slipshod manner, an in consequence, a source of dissatisfaction to both patient an operator.

Take, for illustration, the assembling or soldering of a bridg including the centrals and laterals, and note how often we will se the respective backings united the entire length of their appro imal contact, and yet their union one of weakness and likely t give away under slight stress.

If one is careful and at all painstaking this need not be, f after adjusting them properly in position and carefully retainin their relation while being removed from models, then placing piece of *mica* between their occlusal edges extending up to th pins and projecting labially and lingually about one-sixteenth an inch they should be invested.

When ready to be soldered a piece of 18 ga., 18 k. round go wire should be accurately fitted and placed across the backings a point just beneath the mica, then in soldering permit the sol to flow freely over and around this wire, and the assemblage accomplished with the greatest of strength and the most artis effect, together with the fact that upon the displacement of t mica the interspaces remain open, which gives æsthetic appe ance to the work, comfort by assuming a more natural form li gually, and offers no impediment to speech.

Indications for the use of porcelain. While it is not the purpo of this paper to indulge in a discussion of the advantages and d advantages of porcelain as applied to crown and bridge work (f the specific reason that this society at its last meeting had t pleasure of listening to the best essay yet written upon the subje to my mind), yet it is of too much importance to pass witho reference.

That porcelain work is the ideal of modern prosthetic dental art here is no question, but that it will *never* supersede gold work in he construction of crowns and bridges there is also no doubt, for he reason that it is not generally applicable to all kinds and classes f cases. The conservative indications for its use are somewhat estricted, and in consequence of too much enthusiasm are more r less abused.

Porcelain possesses all the required strength only when nough of it can be used to insure strength, and then it must be upported by a strong and rigid metal framework.

The injudicious application of this work in cases of short, close ites for crowns, and where there is not a considerable alveolar bsorption for bridges, and also where missing teeth throw more an the ordinary work upon the remaining ones supporting bridge ork, is the cause of many failures where the material is con-mned. The application of this work is not necessarily con-ned, however, to constructing all porcelain crowns and bridges, for ith slight effort very artistic results can be obtained in other nes.

Gum restoration on plain teeth. Gum restoration often comes necessary in the construction of bridges where our better dgment suggests the use of gold, or even in partial dentures, for matter of what material the work is to be constructed, no atter how much absorption may have taken place where teeth e missing, there is a prominent factor to be considered, and that the teeth must be as nearly as possible all of the same length m gum line to incisal or occlusal edge, and that their proper gnment must be preserved. In cases where we find this excess-e absorption select an ordinary tooth and bake a neck of gum amel on it sufficient to reach the natural gum. Very little inding will then enable you to fit it nicely to place, when if for gold bridge or a metal plate it can be then backed in the usual anner, or if for a rubber plate, placed in position, and proceed as ual, and you have a tooth restoring lost tissue, preserving the gnment, easier to fit, and which looks far better than could have en accomplished by using the ordinary gum section tooth.

Seamless crowns. Much is heard and said of late regarding e pecuniary advantages and methods of construction of seamless owns for bicuspids and molars, and considerable time, effort and ergy is being expended to perfect the methods and systems of

accomplishing same by means of sectional dies and swaging with hydraulic pressure, etc., yet a careful consideration of possible advantages, as compared to the sectional crown, causes me to affirm that it can have no practical value or apparent advantage, regardless of how accurately it may be produced, over a well made, ordinarily constructed crown; because if the occlusal edge of band is properly shaped and contoured and the cusps closely and perfectly fitted, and carefully approximated before soldering, and a high carat solder used in uniting them, the result is as nearly a seamless crown so far as the joint is concerned, as is ever indicated, or could be desired by the most fastidious; and an appreciable amount of time and apparatus has been saved which is otherwise spent to no practical purpose.

Crown requirements. While the detail of procedure in crown construction is more or less familiar to all, yet it is readily apparent that many persist in ignoring these essentials upon which ultimate success in the true and full meaning depends, to a grossly indifferent extent. Those essentials are *fit*, *occlusion*, *contour* and *appearance*.

Every one grants that a crown must fit, and that it should be so contoured as to restore the points of contact with approximating teeth, and that it should possess that æsthetic appearance which will enable it to obtain or preserve the proper symmetrical alignment and characteristics of the corresponding or adjacent teeth and yet the one essential which enables the crown to restore to the root its former degree of usefulness—occlusion—is neglected abused and forgotten to a great extent.

A consideration of the importance of this little thing of occlusion in bicuspid and molar crowns must bring to our minds the fact that generally speaking no progress of great extent has been made in the manipulative detail of obtaining same in the construction of this work in gold. This may sound like a rash assertion yet it is based upon facts, for the evolution of the ordinary method of procuring occlusal surfaces for gold crowns and porcelain face dummies has been practically from the imprint of the cusp of natural tooth in cuttlefish bone or other substances—to the old copper or zinc individual dies of typical cusps, numbering four or five to the set; then to the copper or steel die-plate with first twelve then sixteen, and then thirty-two molds, evenly divided between the upper and lower; and then to the so-called *systems* with from

erhaps forty to one or two hundred cusps to select from; yet uring all of these improvements and modifications the same gen- ral principle has been zealously maintained—that of stereotyped orms, or, if you please, ready-made cusps.

The fallacy of this principle is apparent. The idea of expect- ng a ready-made cusp form to first evenly approximate the edge f a well shaped and properly contoured band, and then accurately clude with the opposing tooth or teeth in even a majority of the ost typical and normally posed cases, is certainly beyond com- rehension and reason.

Realizing the importance of this phase of the question, I think hat it is just as necessary to make a special cusp or die for the case t hand as it is to first make a band to fit the root; and have in onsequence for some time maintained that there is little place or se for any of these stereotyped dies or systems, with those who ay be disposed to secure both positive and accurate results in heir work.

The method that I now use and teach, and take occasion to utline to you, is not new only so far as its modifications are con- rned. It is rather only a development of the old method of Dr. orman Kingsley (Evans. pp. 83, CVI.) of making a cusp for the se from an imprint, or outline, of the occluding surfaces of the pposing teeth, being so modified in detail as to be simple and xpeditious, accurate and artistic, and equally as applicable to ummies for bridge work as to single crown. A brief description llows :

In fitting the band it should be cut so that the cervical edge hen soldered is the exact size of the root measurement, while the rcumference of the occlusal edge may vary according to the differ- ce between the size of the root and its relation to the dimen- ons of the space to be filled. The cervical edge should be so aped as to pass a *uniform* distance beneath the border of the m. This distance should be but slight, only pressing it rootwise fficiently far beneath the gum to prevent the lodgment of accu- ulations.

The occlusal edge should then be cut the proper length with ference to allowance for depth of cusp, filed smooth, and so aped as to fill the space, restore contact points, and preserve a mmetrical alignment.

When this adaptation is completed, fill the band, when in

position, with wax and proceed to take the articulating bite and impression in plaster, which is the only reliable material, and which can be taken together by using an original but simple cup for the purpose, which will carry the plaster, if mixed of a fairly thick consistency, into place and permit the closing of the teeth into proper occlusion at the same time.

After securing same prepare for separating and fill each side separately mounting upon the articulator at the same time. When the models are separated, the wax inside of band is removed and the screw is adjusted so as to bring the teeth in close articulation. Then varnish the surfaces of models in close proximity with band with collodion.

Thinly mixed plaster is then placed inside of band and the articulator closed, which firmly imprints in the plaster in band the occluding surfaces of the opposing teeth. (Model 1.)

When the articulator is opened and the surplus plaster trimmed away even with the band, the remaining contents form a somewhat crude cusp, but one that presents perfect outlines of the opposing teeth. (Model 2.) We do not stop now, but proceed to apply our artistic skill by individualizing and typifying the cusps so that they may resemble the natural tooth, and which is easily accomplished by simply carving the typical grooves and sulci which in no way need destroy or interfere with those places marking the desired points of a perfect occlusion. (Model 3.)

Modeling compound could be used, but is not so easy to carve because of the tendency to flake away, and the susceptibility to changing form under pressure.

A study from natural teeth of cusp form and outline will enable any one to acquire with more or less dexterity, the skill to produce very artistic results with comparative ease.

The band and its contents should then be removed from model with a precaution to preserve the relation, when we are ready to proceed with the dies. If a solid or cast cusp is desired, a ferrule or ring of brass of large enough dimensions should be filled with moldine into which the plaster cusp is imprinted to the depth of the edge of band, the mould then placed over the Bunsen until dry and hard, when the gold scrap can be fused into it and cast by using a piece of steel or carbon large enough to cover the area of the cusp. Cast cusps, however, are not recommended because to swage them gives a better reproduction of the carving, more pe

fect outlines, and they are more easily fitted and adapted to the band, and can be made of any desired thickness by filling with solder.

For a swage cusp the plaster forming same should be trimmed down along the peripheral border just enough to expose the edge of the band. This is materially important as it allows for the thickness of gold used for cusp, and so renders *possible* a perfect approximation of the edge of cusp to band, which could not be procured without such an allowance. The metal ring is then filled flush to its edges with moldine, into which the plaster cusp is firmly imprinted just far enough to outline the exposed edge of band. A funnel-shaped cap of metal or hard or soft rubber having a flat base of equal diameter with the metal ring, and a small perforation through the center is then placed over the mold and the button or cusp cast of pure *Watts* metal by pouring the same into this cap. After the metal cusp cools sufficiently, it is easily separated from its attachment through the small perforation to remaining portion of metal, and is a perfect reproduction of the plaster contents of the band.

This cusp button is then placed upon the opposite side of the ring containing moldine and carbonized nicely, which can be most easily accomplished by igniting a small piece of gum camphor which deposits a beautiful layer of carbon without generating any perceptible degree of heat. The rubber ring is then adjusted, and the counterdie run of *Mellotte's* metal, or fusible alloy.

The gold forming the cusp is now swaged into the counterdie with lead in the shape of a small ingot or bullet, and after being conformed to the proper shape the surplus is removed, and then the button is used to bring out the finer lines.

The *Watts* metal is used to form the cusp button for two special reasons: First, it is harder and higher in fusing point, which precludes the probability of uniting the two by pouring one upon the other; and, second, because it is impossible to swage or conform to a desired shape a piece of gold or other soft metal between two like surfaces of even resistance without stretching very materially. Something must give in this procedure, and unless one of the dies is softer and more yielding than the other, the gold will suffer and be much altered in thickness by the time it has been properly swaged, and it is most noticeable around the edges. After the gold cusp has been formed the band is then

placed in position upon articulator after the removal of the plaster cusp, and the gold cusp trimmed down with a file until it perfectly approximates the edge of band and admits of the closure of articulator into occlusion, then wired together and soldered, without too much deference to economy. The result is a perfect occlusion, with an almost imperceptible seam of union between band and cusp, and yet accomplished in about the same space of time ordinarily consumed in selecting one of our numerous ready-made cusps, and fitting it to the band and occlusion with only a faint hope of success and accuracy.

These same general principles are applicable to the construction of porcelain face dummies for bridge work, and it is needless to say in conjunction that these should occlude just as accurately as the crowns, if our desire is to reproduce or improve upon the natural condition of beauty and usefulness. In bridge cases the abutments should always be completed first, and also should each individual part be finished before they are finally assembled or united. Such so modifies and facilitates this operation as to render it simple. After completing the abutments they are placed in position upon the roots, and the articulating bite and impression taken in plaster as described. When this is filled, separated and placed upon the articulator the facings are selected, ground to fit and backed with a single backing of 34 gauge pure gold, because the cusp here will form the reinforcement. The occlusal edge of the facings should be beveled, as mentioned before, and the cervical edge should, after being ground to fit the gum accurately, be so rounded and smoothed as to prevent the occurrence of hypertrophy of the gum, which will result if this edge is left at all rough or sharp. The backing should only extend as far cervically as to take in the pins nicely, and should never project far enough to pass between gum and facing when in position. A small surplus of backing should extend beyond buccal surface of facing and at right angles with it, so that the edge of cusp may be placed against it to protect the occlusal edge. The facings are then placed in position on model and retained from the outer surface so that their backings may be exposed. At least one of the pins should be left to hold the plaster which is now poured against the backings and into which the occluding teeth are imprinted. Use ordinary means to prevent the plaster from adhering to any surface but that of the facing. After hardening, this plaster cusp is trimmed and carved

s before described. Then follows the making of the cusp button, ounterdie, and swaging of cusp. In fitting the cusp to the facing, void the showing of too much metal along the occlusal edge, verhanging edges and too close proximity. After fitting nicely, nvest and solder each dummy separately, and in so doing so fill in r render convex the lingual surface that it may be self-cleansing hen in the mouth, as too much attention cannot be given this mportant phase of bridge construction. No matter how extensive he assemblage is then easy, the detail simple, and the result ccurate. What more do we want?

The ideal and modern bridge work is that which fits and ccludes, which is self-cleansing and built strong, and which is upported by good stable roots, no one of which will have to do nore than the work of two, no matter what the sacrifice.

Report on Dental Art and Invention.*

By J. E. Keefe, D. D. S., Chicago, Ill.

Your committee on dental art and invention respectfully submit the following report:

Since our last meeting there have been 212 patents granted n instruments and appliances pertaining to dentistry.

Your committee has during the year communicated with 128 f the 212 patentees, many of whom have responded, some with odels and others with descriptions of their various inventions.

A large number of these are practically useless to us, and as ich shall not be presented. Many of the instruments which will be resented we cannot pass judgment on, not having had them in ossession long enough to experiment with. Those which have been sted the committee offers criticisms on. The first under consideration is a compressed air and water syringe by A. C. Clark & Co., of hicago. This syringe almost reaches perfection. The mechanism will not be necessary to explain. It is automatic in action. By olding the syringe between the finger and thumb and pressing in ny direction, one breaks the valve communication, which allows ie air to escape.

The value of this instrument will be appreciated by all who xamine it.

No. 2. We next take up the little giant separator, by Dr.

*Read before the Illinois State Dental Society.

Henry W. Gillett, of Newport, R. I., manufactured by S. S. White Mfg. Co. These separators come in three sizes and are powerful little instruments. They are accompanied by a key which is magnetized at both ends, for the purpose of holding the nut while adjusting it, it being too small to handle with the fingers. The small size of these separators makes them very difficult to manage, especially on the bicuspid and molar teeth.

Then again what seems a great objection is the fact that in tightening the screw it must necessarily work down between the teeth on the gum tissue, thereby causing the patient severe pain. Could this fault be overcome, a great deal might be claimed for it.

No. 3. The next is an adjustable slip joint, manufactured by the Dental Protective Supply Co., Chicago. The special advantages claimed for this slip joint over others now in the market is, that the bearings are cone or taper shaped and are adjustable, so that the wear can be taken up, which is not the case with any other instrument of this kind.

No. 4. Next the Capewell improved dental separator. This separator was presented to you last year in a crude form. There have been some improvements in it which makes it a valuable instrument in some cases.

No. 5. The Lewis crown articulator, manufactured by the Buffalo Dental Mfg. Co. This instrument presents some new features, the most prominent of which is the side or lateral motion by which a test of the proper occlusion of the cusps of the crown can be obtained.

No. 6. Moore's universal spring apron. This apron is intended for wear in the laboratory. It can be made of any material, and is held in place by springs inserted into openings around the neck and waist-bands and springs. When it is necessary to wash this apron, these springs are easily removed and as easily replaced.

No. 7. The dental clamp mirror, a suggestion of Dr. Chas. Hamdon, of Bowmansville, Ont., sold by Dr. J. W. Ivory, Philadelphia. This mirror is so constructed that it can be slipped into any clamp, and set at any angle. This is a very simple and useful appliance.

No. 8. Automatic disk mandrel, No. 320, manufactured by S. S. White Co. This disk mandrel locks automatically when pins are pushed through the shank of the mandrel. This promises to

be a good mandrel, the only objection being that if pressure is put on the disk the pin will slip out. The sample given us to test, however, may have been imperfect.

No. 9. The general separator, manufactured by the S. S. White Co. This is an improvement on the Perry two bar separator. This instrument has all the advantages of a perfect separator. Possessing so many merits it is necessarily somewhat intricate in its mechanism. It can be so adjusted as to separate any teeth. It has two stops which can be adjusted by a flexible wrench which can be set when clamp is in position to prevent that very objectionable feature of most clamps, that is, of slipping down on the necks of the teeth. This invention is not a new one, but so many dentists have not yet seen it, we thought it well to present it to you this evening.

The following instruments have been sent for inspection, and most of them seem admirably fitted for the capacities for which they are intended:

Dr. W. M. Seeger, of Louisville, has sent us a new tooth crown and two appliances, a rubber dam holder, carrier and sheet protector for flexible saws, which will be on exhibition.

Dr. John F. Snedaker, of Ogden, Utah, has sent a handpiece and frame for dental saws.

Dr. John F. Davidson, Richmond, Va., tooth filling material.

Dr. W. O. Talbot, Biloxi, Miss., an instrument designed for measuring size of jaw and distances between teeth.

The Bonwill blowpipe, sent by the Consolidated Dental Mfg. Co.

An automatic jaw brace, by Dr. R. L. Halperin, Chicago.

A new matrix retainer, by Dr. J. W. Ivory, Philadelphia.

A gold crown holder, by Dr. J. W. Ivory.

A new single action plugger, by Dr. J. W. Ivory.

H. D. Justi & Son have sent the following articles: A set of Nelson dummy gold teeth crowns; Beutelrock's nerve pulp canal instruments and Young's adjustable perforators for punching two holes at once, this being an improvement on the old one; also, Power's engine mallet, which is an improvement on the old one.

Dr. R. H. Antes, of Geneseo, Ill., has sent us his improved dental plugger, the improvement being the striking of the hammer in the head of the handle holding the plugger. The doctor also sends three models, showing his method of preserving samples of bridge work, as he has put them into different mouths.

The S. S. White Co. have sent the following:

1. Shriver's bridge repairing pliers for fixing facings without disturbing bridge.

2. Perforated flexo filed, adapted for insertion in split chuck.

3. Vulcanized rubber rests for instruments.

4. Herbst steel polishing strip for finishing fillings.

5. The Avil engine mallet, with swiveling or adjustable head which can be placed at any angle and impart a direct blow.

6. The Elliott adjustable angle broach holder, enabling broach to be inserted at any angle in tooth canal, when chuck can be released and rotated between thumb and finger.

7. Combined cotton holder and waste receiver with removable metal cap and glass cup.

8. Fyrite, a superior investing material for crown and bridge work, protects the teeth and does not crack in firing.

9. Bracket table lamp, No. 22, can be fastened and suspended from any bracket table; cylindrical glass receptacle for alcohol.

10. Articulating disks—to facilitate the fitting of Logan crowns to natural roots.

PROCEEDINGS OF SOCIETIES.

Illinois State Dental Society.

Thirty-fifth annual meeting held in Chicago May 9, 10, 11.

DISCUSSION ON DR. COOK'S PAPER. SEE PAGE 537.

Dr. A. H. Peck (opening discussion): I have not had time to look Dr. Cook's paper over sufficiently to make a thorough discussion of it. The paper is especially interesting to us because it indicates on the part of the essayist the execution of a large amount of labor. I know something of what it means to do original work sufficient to be able to present a paper such as you have just heard; and when we remember that the author has in the past year read two or three other papers of equal scientific importance, we can realize that he has done and is doing a large amount of work.

In regard to gangrene, he states the definition as meaning the death of tissue *en masse*, which, of course, is correct, but his application of it to the pulps of teeth, in one sense, perhaps, is not well taken. He has failed in my judgment to make the application sufficiently clear. We must remember the fact that very many

pulps of teeth die which do not pass through an inflammatory process, strictly speaking. It is generally accepted by pathologists that in order for the inflammatory process to run its course in the pulps of teeth, the pulps must have been previously exposed by the process of caries, so that microörganisms and their poisonous products have direct access to them. We know that many pulps of teeth die that are not exposed, and which have not passed through the inflammatory process, but rather the hyperemic process, and the pulp has died because of an embolus which has lodged in the blood vessels, no doubt, at the apex, thus cutting off the circulation of the blood, and when pulps die in this manner they die *en masse*. Death is brought about very suddenly, and in these cases we could properly refer to them as being gangrenous. At the same time, we open into the root canals of teeth containing dead pulps which contain no microörganisms whatever, hence the point I am trying to make plain is that in all cases of gangrene, as applied to the pulps of teeth, the microorganisms may not be, and in many cases are not present. When the death of a pulp is brought about by their influence, has run the course of the inflammatory process, it is, strictly speaking, a molecular death of the pulp rather than death *en masse*, because the suppurative process is inaugurated, and the tissue is invaded and dies, we might say, molecule by molecule, or a small portion at first being affected by the pathological process, this process progressing until finally the entire pulp is overcome.

It may be of interest to some of you to state that if the literature on this subject is looked up thoroughly, you will find that our own Dr. Black was the first man in the realm of pathology to call attention to the fact, as stated in the paper, that the ptomaines of these various forms of microörganisms resemble in the abstract the vegetable alkaloids.

In regard to the ptomaines not inaugurating special sets of symptoms in pathological conditions of the system, that is true, it being accepted as a fact by pathologists generally. But I think Dr. Cook is wrong in drawing a parallel comparison between this action or nonaction, if you please, and drugs like strychnia and morphia and others of like nature, for it is well known in the realm of materia medica that decided sets of symptoms—symptoms very marked in their manifestations—are nearly always inaugurated by such poisonous drugs as have been mentioned.

Dr. G. V. Black: This is an exceedingly interesting subject, and I wish we could have all papers of like character, and particularly do I wish that we could have more well written papers upon the subject of bacteriology of the mouth. Very few men have taken up this subject as a branch of science and continued its study—a subject which to us as dentists is of very great importance. It would seem, counting the years back previous to the time when Miller made his investigations of the microörganisms of the mouth, that we should have many men who would have studied these microörganisms, particularly the ones that habitually inhabit the human mouth, and it seems that we should have known them very well to-day, but such is not the case. We are still uncertain as to the microörganisms ordinarily inhabiting the human mouth. Miller has isolated very many; many others have done the same, but generally without very systematic study of the individual microörganisms that are undoubtedly habitués of the human mouth. As we go back and forth we take into the saliva saprophytic microörganisms continually; they dwell there for a while and are thrown out; they do not remain there. All kinds of microörganisms are brought in. I may say, frequently pathogenic microörganisms are brought into the mouth in this way that do not belong there. I wish we could have some such men as Dr. Cook, or others, or a number, who would cultivate these microörganisms until we can understand and know what microörganisms are habitually in the mouth as separated from those organisms accidentally in the mouth.

Dr. Cook has spoken of forty cases in which he has examined dead pulps—to me the most interesting part of his paper. It seems he has found in these pulps the staphylococcus aureus and albus a considerable number of times. In taking microörganisms from healthy mouths three years ago and cultivating them, I found the staphylococci in half of the mouths; at other times I would go through the session and find only a few in the number of cases examined. They are pathogenic microörganisms. One thing which struck me as remarkable was this, that he found the streptococcus pyogenes thirteen times in forty cases. This is a virulent microorganism; it is pathogenic, very decidedly so, a microörganism which we usually find in carbuncle and serious suppurations of that nature. I have not found that organism in the human saliva but two or three times in all the cultivations I have made.

I want to speak of the apparent use of the terms parasitic and aprophytic. We may have parasites that are not pathogenic; ve have parasites living in the saliva that are apparently non-athogenic; at least, we cannot yet ascribe to them pathogenic ualities. They are strict parasites, however; we cannot cultivate hem; they do not grow anywhere else except in saliva; they will ot grow on gelatine plates or in bouillon. Saprophytic microörgan-sms you can cultivate on ordinary media; they live habitually on ead material. We have a number of strict parasites inhabiting he oral secretion, some five or six varieties. From my own study f the microörganisms of the mouth I should say that we can nearly ount the habitués of the human saliva on the fingers of the two ands. All the rest that we find there are accidental, and will not emain there unless the conditions are abnormal. But if patho enic organisms are present, and there is a break, if a pocket is ormed in the tissues into which pathogenic microörganisms can nter, they will manifest their pathogenic qualities, and trouble ill arise, but not before.

As to ptomaines and leucomaines, and all of that family of maines o called, and the divisions of these from the toxalbumins, I think is generally considered that many of these products directly sembling the alkaloids in plants do produce disease, or are the tive agents in producing disease. In typhoid fever, tetanus, nd a number of diseases, the active poisonous principle, elabo-ated in the body by the growth of these microörganisms, is the rect agent producing the disease, and it belongs to this class. ot all of these, however, are crystallizable and basic in their aracter, and in that degree they fail to resemble the vegetable kaloids. A toxalbumin is a different product entirely, and, cording to Vaughan and Novy, it does not resemble the other isons, but it is an albuminoid poison that is liberated only after e death of the microörganism, and is the result of the solution of e dead body of the microörganism. Many of our most virulent isons are liberated in that way, and their effects are not mani-sted until the microörganisms are dead. We account some dis-ses to these, the product of pathogenic microörganisms. But prophytic microörganisms incapable of growing in the tissues ay form toxalbumins which induce disease or poisoning by being troduced with food. Thus disease may be induced by decomposed od being eaten, as the poisons of ice cream, partially decomposed

milk, etc., which cases are from this variety of poisonous compound. So it is not necessary for the organisms to be pathogenic in order that they may produce poison. It must be a parasitic microorganism producing poison in order that it may be pathogenic, then we may have a parasitic microörganism not producing poison, and it will not be pathogenic.

Dr. Cook (closing the discussion) : I am very sorry my paper did not create more of a discussion.

With reference to the question brought up by Dr. Peck as to the resemblance of poisonous products, mentioning strychnine and morphine poisons, I simply alluded to them, and not with a view to making any sort of comparison of the poisons. Oftentimes there is considerable misunderstanding in regard to the products liberated by bacteria, and a great many do not understand the difference, and I simply mentioned these in connection with this work.

With reference to ptomaines and toxins, in order to produce a ptomaine we have got to have a dead nitrogenous substance, according to the best authorities. As regards the toxins that are liberated, Dr. Black said that the microörganisms which produced them were parasitic in character, and that many were uncultivated and many inhabited the human mouth that were not pathogenic. Of course, if they live in the mouth and we cannot study them by the methods at our command for cultivating them, we cannot determine whether they are pathogenic or not. According to the law of Koch, we can only determine pathogenic microörganisms by their action. Toxins can be obtained from dead bodies, as it were, of the microörganisms ; they are liberated from the tissues by these microörganisms, and the microörganisms are not necessarily dead when the toxins are liberated. I believe Dr. Black mentioned that the toxins were liberated from the dead bacteria in the tissues. I do not believe that the best authorities on bacteriology agree with him regarding that point.

Dr. C. R. Taylor : I do not get it clear in my mind as to whether a toxin is the product of bacterial life, or whether it is the bacteria itself, or whether it is the body of the bacteria.

Dr. Cook : A toxin is a substance liberated by the action of bacteria on albuminous substance. I believe this view is entertained by the best authorities. The toxins and ptomaines are very different substances and produce different symptoms in the body of the host.

I was in hopes that there would be more discussion on this ıbject. I wish to thank Drs. Black and Peck for what they have aid on my paper.

DISCUSSION ON DR. F. B. NOYES' PAPER. SEE PAGE 499.

Dr. E. H. Allen: I have listened with a good deal of interst and profit to the paper of Dr. Noyes, and as far as the histologal aspects are concerned, I am incompetent to discuss them. Iowever, I do see some practical points running through the paper hich have explained to me the reason why I have failures of my wn and have seen the failures of others in the cleavage of the namel, thereby exposing the otherwise solid filling to the danger f subsequent decay, and simply because I cannot understand, and o not know the best methods for preventing these failures. It ems to me the essayist has dealt with this subject in a practical, ommon sense way.

With reference to the surface angle, it appears to me that we, our practice, have to bevel the margins of the cavity to a greater less extent. Perhaps some of us have done so, not knowing hy, except it was to cut the outer margin and also to cut away into ıe edge, and in this way we are in danger of fracturing the tooth ıring the insertion of the filling. After this demonstration I can how the enamel rods are protected by such methods.

Dr. G. V. Black: I hardly expected to be called upon to scuss this paper at this time. I hardly know where to begin or ıere to end if I should undertake to discuss it. It is one of the ost important subjects with which we have to deal in filling eth. In preparing our cavities, if we fail to properly prepare the amel margins and the cavo-surface angle in the different rtions, we will make a failure of our fillings almost necessarily; nce the necessity, if we are to operate well, of studying the amel carefully, not simply histologically, but the physical charters of this substance as it comes to us, as we feel it and work ınder the chisel and under the excavator at the chair. We need study it histologically sufficiently to enable us to pursue the ıdy understandingly with the chisel and with the excavator, and is with these instruments that we make proper studies of s structure in order that we may so cut it, so trim it, and so ange our margins that the histological elements of these marıs may be strong and durable. We should carefully study the

lines of strength and of weakness of the enamel. I cannot very well go into that phase of the subject at this time, but you will see from the pictures that have been presented this evening of these fissured grooves that the enamel will have no strength along the lines of the grooves. We need to study this subject closely and learn what the strength of the enamel margins may be in this and that position. The enamel has only begun to be studied. As a profession we have only just commenced to see the importance of the studies of the enamel histologically and at the chair. You must remember that the principal studies of this tissue relate to the direction of the enamel rods with reference to its cleavage, its lines of weakness and strength, and the arrangement of cavity margins as done at the chair from day to day as we are operating.

Dr. C. N. JOHNSON: I feel the same as Dr. Black when he said that we are about beginning to realize the importance of the proper preparation of the enamel margins, and it is almost impossible to discuss intelligently a paper of this kind in the short time at my command, for the reason that it covers such a wide range and takes up questions that come to us closely in their practical application. We cannot take the enamel as we find it coming to us in the individual teeth on which we operate and examine it microscopically, for we have not the facilities for doing that. We must learn from practical experience, from repeated observations as to certain qualities of the enamel and how the enamel feels under the chisel or excavator. Until we do that, we cannot hope to prepare the enamel margins as they should be prepared. We have seen several instances to day where there has been the greatest variation in the direction of the enamel rods; we cannot tell anything about them when we come to a case in the mouth from microscopical examination, but we can detect them if we have well-trained or educated touch. We can detect instantly under the chisel that there is something wrong in a particular place in that particular enamel. We can detect it by chiseling and by the response which it gives to the attack of the instrument, and it is that particular feature of this paper that I wish to call attention to and to make a plea for close observation of the behavior of enamel under the feel of the chisel or excavator. Until we get an intelligent perception of the tissue in this particular we cannot prepare the enamel margins perfectly. It is impossible to lay down a set of rules and say what degree of bevel shall be given to the enamel in

uch and such a cavity at a certain point. We must be guided argely by an intelligent perception of the behavior of the enamel nder the chisel at the time of operation. The dental profession as not paid as much attention to this point as it ought to. A reat many operators are paying attention to it and are obtaining uccessful results. Margins so prepared have stood for years nder the impact of mastication without the operators knowing uch about the histological formation of the enamel. It was a atural perception on their part in operating upon the enamel rom day to day, and they knew by the touch of the instrument hen they had attained perfection in the preparation of their mar-ins. It gives us a more intelligent perception of the question to ave demonstrated to us the reason why the enamel behaves dif-erently in different cases.

I am delighted with this paper. I am glad it has been so ably resented by a young man. It shows the drift of investigation in he profession; it shows that our young men are taking hold of hese questions, and I want to say that in a decade from now if the rogress of dentistry goes on as it has, we will know by micro-copical examinations and demonstrations why we get certain esults from practical operations.

With reference to nomenclature, this is an important point. t has been the stumbling block for writers upon this subject for ears. It has not been properly systematized yet, and I do not elieve we have to-day terms that are altogether satisfactory. I ake this plea for those who are thinking upon this subject to con-ler the nomenclature of these margins, surfaces and angles, with e hope that efforts in this direction will crystallize into some-ing that will give us a nomenclature that will be intelligent, mple, easily comprehended, and utilized.

Dr. GEORGE W. COOK: I want to compliment Dr. Noyes on his ork from a microscopical point of view. I am not capable of scussing the preparation of enamel margins, but I appreciate the mense amount of work he has done in connection with the prep-ation of these microscopic slides and the photographic work. aving been interested in this work, I must say that I have been ry much educated in regard to cavity preparation after having en the demonstrations this afternoon. I wish that I could speak you about the preparation of enamel margins, but I cannot do . I am glad to have had the opportunity of seeing these beauti-l pictures.

Dr. A. W. Harlan: The only point I wish to speak of in this connection, after sitting here and having heard most of the paper (with which I am very much pleased), is this: In the preparation of cavities there is a tendency on the part of a great many operators, since the introduction of machinery, to do the work entirely with machinery. I wish to protest against that, because I think the lines and angles can much better be made by the use of chisels and other hand instruments; they can be made with certain positiveness and directness, and I hope the young members of the profession who are filling teeth will spend a little more time in learning to manipulate with their hands and not try to do everything with disks, burs and other instruments that are used with the engine handpiece. The best work done by Dunning and Maynard, F. Y. Clark, John S. Clark, William H. Morgan, W. W. Allport, George H. Cushing and other operators, whose work I frequently see, and that of the late Dr. E. R. E. Carpenter, was accomplished with hand instruments; that is, the external marginal cavity preparation, and also, before the introduction of machinery, the internal work was done by hand, and I think the sooner the dentists of this country who rely so much on machinery realize that they can better prepare cavities by hand work from the shoulder down to the tip of their fingers, the better will they prepare cavities, and the better will the fillings preserve the teeth.

Dr. J. N. Crouse: The students in our dental colleges, in my opinion, ought not to have dental engines until a few weeks before they graduate. They should learn to prepare cavities by hand using chisels and sharp excavators, because it is less painful. With these instruments the dentist can feel where he is going, and he can tell the portion of tooth that ought to be cut away much better than he can by using a sharp bur in an electric engine. This is a serious matter; nowadays the average student does not learn to manipulate skillfully with hand instruments; he does not know how to use his fingers, and does not learn how to pack gold properly. I believe the education of the fingers should begin in the dental colleges. There is too much machinery used to-day in filling teeth. The colleges wish to insert too many fillings; they want to get too much done. The consequence is, that the student takes an engine and bur and away he goes; and as students operate on subjects who are supposed to get their work done cheaply, such patients are not allowed to kick if the operation does hurt. I con-

tend that the young men turned out of our dental colleges to-day are not so good operators as the men you see here, in proportion to the number turned out. (Applause.)

Dr. NOYES (closing the discussion): I have but a few words to say in closing the discussion. Such pictures of enamel can only show us what we feel, can only interpret to us what we learn at our chairs and why things feel as they do. We must learn to form our cavity margins by the feeling of the tissue under the cutting nstruments. But we must or should have some ideas in regard to he direction of the structural elements in order to feel for them ntelligently, to feel for the way they ought to go, and learn to ecognize the sensation of the cutting instruments and interpret hose sensations by the structural elements so as to intelligently hape the margins as we cut them.

In connection with what has been said with reference to hand nstruments, the more closely I have followed the direction of namel rods, the more easily do I excavate with hand instruments n places where I used to think I could not do it without other nstruments. This close consideration of the direction of enamel ods has increased my facility of operating more than any other ne thing in the time I have been in practice.

DISCUSSION ON THE PAPER OF DR. GOSLEE. SEE PAGE 542.

Dr. R. N. LAURENCE: *Ladies and Gentlemen of the Illinois tate Dental Society:* After listening to a paper fit to grace the ages of a text-book, we, the older members of the profession, alize fully the wonderful progress that has been made in this line work. To my mind, no better methods, or greater advancement an that set forth by the writer has been presented in the direc- on of an artificial substitute for replacing the natural organs. It beyond contradiction that a properly constructed crown or bridge the nearest approach to the natural organs of any substitute.

During the past few years I have had the opportunity of exam- ing and inspecting many cases of both honest and dishonest ork, and it has led me to be cautious and conservative in my forts in this line. So many dentists will attempt the impossible ases regardless of conditions. The number of failures that have ome to my notice from the hands of the advertising dental parlor an, or the student fresh from some so called dental college, nouncing himself to be an expert in this line, are sufficient to

make a conscientious practitioner sick. I would bring to your notice three cases that have come under my observation which will illustrate in some degree the causes of failures set forth in the paper. Number 1 was an extensive upper bridge, anchored upon the wisdom teeth and the cuspids by shell crowns; the cuspids were open-face crowns, as referred to by the essayist, and adapted without much grinding. This case came to my notice with an ulcerated left cuspid, decay having set in under the margin of the gum, had perfectly cut the crown from the root, and the piece was moving up and down, suspended from the right cuspid to the wisdom tooth on the left. Number 2, similar to Number 1, came to me to have the facings on the centrals replaced, stating, that within two years these facings had been replaced nine times. Number 3, which I pass around for your inspection, is a small bridge, which illustrates the sledge hammer method in driving the crown and pins into position. This case presented to me with a fistulous opening, causing much distress on part of the patient. I removed the piece, and we found the pins in position as you will see by moving the upper portion.

In conclusion, permit me to pay my respects to a few of the real artists in the construction and adaptation of crowns and bridges, both gold and porcelain, whose work I have had the pleasure of inspecting, as well as the beautiful pieces of work made by or under the direction of the essayist. I would refer here to the excellent work of Professor Schwartz, Dr. Taggart, Dr. Good, and others, whose work is perfect in every detail. Such men are an honor to our profession, and success will crown the future of students who, under the guidance of such teachers, complete a course of instruction in one of our *real* dental schools.

Dr. E. J. PERRY: I wish to congratulate the society upon having heard this interesting paper. I have no fault to find with it. I am not going to discuss it in the strict sense of the word. I have read it and I understand it. The paper is its own best argument. It finishes up the subject very comprehensively. Everybody knows about the good work of Dr. Goslee; every one knows that he finishes a thing all right. Every one does not appreciate however, the immense amount of work that he has performed in these models and the samples that he has passed around. I want to take slight exception to one or two little things—I do not like to commend him too much—and I refer now to seamless crowns.

have always contended that a crown should possess at least three things; that is, it should fit the root at the proper place, namely, just under the margin of the gum. It should occlude with the opposing teeth, and it should fill the interproximate space somewhat at least, as the natural tooth should, and I do not care if that crown is made with platinum, silver, lead or aluminum. If it possesses all three of those qualities, then it is a cracker jack of a crown. Now, if we have it made of twenty-two karat gold, all right. There is no objection to that. It goes without saying that I would use gold. If we could arrive at this point by a shorter circuit than has been described, then that is the best way to do it. The doctor says that much valuable time is lost in the various steps which are observed in the manufacture of seamless crowns, and then he describes with great particularity a method of producing these buttons, carving up the cusps, etc. I think that is a most circuitous way of getting at the point. Dr. Hebert, of this city, has made an improvement upon the seamless crown within the last few months, which has come to my notice, and has appealed to me as being a very good method, so much so that I have been making my crowns in that manner. I thought there was a clinic to be given by Dr. Hebert and his layout was to be exhibited. But I will not speak of that. All of the advantages that were emphasized by Dr. Goslee are secured by this method. The method is less circuitous.

I want to say a word or two on the restoration of broken roots. If I understood the doctor's paper rightly, he restores the ragged ends of broken down roots with amalgam. I have done that a great many times, and I have quit doing it, for the reason that I do not think I have got satisfactory results. The amalgam in after years seems to oxidize the gold, and there seems to be going on in there something—I do not know what it is.

As regards cutting broken down teeth, I do not cut them off with the excising forceps very much, because it seems to me much easier to cut them down with burs, that is, bur out the dentine and break off the frail enamel walls, and then stone down with carborundum stones. I have reference to those cases where the entire crown is excised with the excising forceps.

Dr. Laurence has sent around for inspection a vile affair which he has condemned, and which I condemn also. I just want to say that this does not rise to the dignity of a bridge. A tooth

that swings into another tooth is not a bridge, but more of a gate than a bridge, and I want to go on record as being bitterly opposed to the general and mechanical principles of hanging one tooth to another with any expectation that the dummy will do business any length of time. (Laughter.)

As to the devitalizing teeth for the purpose of putting on bridges. Here is an argument right here (pointing to models). I had a number of other points that I intended to speak of, but I am reminded that we have already done a good deal this afternoon, and I will not further inflict myself upon you.

Dr. J. E. NYMAN: In all sincerity, I must say that this is one of the best papers I have ever heard in this department. There is no question about it. We may find fault with it here and there in detail, but to find fault with it in general is utterly impossible: and while he has spoken very nicely of the paper which I had the privilege of reading before this society last year, please believe me, we do not constitute a mutual admiration society.

We hear, and always have heard, a great deal of condemnation of the practice of bridge work. It is not the principle of practice of bridge work that should be condemned, but it is the poor judgment and worse execution of most men who attempt to practice it.

With reference to inflammation around the gingival border of the gum, we know that these pathological conditions arise almost altogether from the carelessness on the part of the practitioner. I have noticed that these careless practitioners are always prone to ascribe the results of their carelessness to some agency entirely beyond their control, hence has arisen the ridiculous theory that it is due to some electro-chemical action between the gold or platinum, as the case may be, and the gum tissue. The prime cause of trouble in these cases is the faulty preparation of roots and the ill fitting bands which result as a consequence. A second factor which causes inflammation is the manner in which the roots are trimmed down. If sandpaper disks, carborundum disks and the like are used to trim the roots below the gingival border of the gum, they cause a laceration which, while it may heal, the tissues seldom regain their normal condition. Moreover, there is extreme likelihood that the grit from these disks will imbed itself in the tissues, and unless it is carefully washed out with a hypodermic syringe, the needle of which is inserted under the gum margin there will be an area of inflammation within a short time.

With regard to the question of devitalizing teeth prior to crowning them, I think one can safely say that, with the exception of some rare misshapen forms of teeth, it is utterly impossible to properly prepare a tooth for a crown if it has a living pulp in it, for the simple reason that no patient would tolerate the excruciating pain which would ensue. And even granting that the patient did submit to it, we may be almost certain that the nerve in that tooth will never recover from the shock it has received—will die, and the operator will find himself with an abscessed tooth and an angry patient to deal with. In dealing with broken down roots, it is quite essential to restore the lost portion in order that the band may be easily and properly fitted. I prefer to do this with some of the adhesive cements instead of with amalgam, for if amalgam is used we must cut away still more of the root to secure retention, and make an already weak foundation still weaker. Then, too, I always endeavor to fit my bands up beyond the margin of these restoring fillings, and I can only be sure that I have done it by removing the material that I used to restore them with, after the band is in place.

The doctor referred to trimming the mesial surfaces of roots. I think that is about the hardest surface of all to properly trim down. He spoke of trimming it with a fissure bur. I have never used that method, but have usually accomplished this result by injecting the gum septum in the interproximate space with cocaine, and then deliberately cutting off a section of the mesial surface of the root with a large diamond disk, carrying it well down below the margin of the gum. This, of course, injures the gum to some extent, but it is painless because of the cocaine injection, and heals readily because it is a clean cut. Thus I am enabled to trim this difficult portion of the root quickly and accurately. I keep an assortment of diamond disks of various sizes and shapes for this work of trimming roots, and I prefer them to carborundum disks of any description, because these latter are so prone to break. Something catches and twists, and the next thing you know, you have a small sized circular saw, so to speak, tearing the patient's gum.

I am glad the doctor condemned open face crowns as he did. To my mind there is no earthly excuse for putting them on except when we wish to make a temporary bridge, and those cases are few and far between. They are a failure from both an artistic and

mechanical point of view. It is quite true that the teeth on which they are placed are only saved to be lost.

I have never found it necessary to make double backings for facings in order to reënforce them. I have preferred to use one thick backing, than to adjust two thinner ones, using pure gold of 26 gauge, B. and S.

I am glad he spoke against seamless crowns, because I believe we can make a crown by the customary method much quicker and easier, and with more certainty of success in the long run than we can with the seamless crown method. The dies obtained by pouring Mellotte's metal into plaster or modeling compound impressions are not the idea of accuracy; that is, those that I have tried have not been, and I have tried both long and hard. Then, too, Mellotte's metal is not the unyielding material that many operators would have us believe. Of all the seamless crowns that I have ever seen made, even after they were completed, they required nearly as much fitting to the root as the first trial band did. I wish that he had forcibly condemned the practice of putting on ready-made crowns. When I hear a man say that he does so, and that he finds they are all right, I generally make up my mind that he is one of those men who is still putting in cotton root canal fillings and who does not care whether root canals are filled with saliva or not, while he is treating them; who fills the larger part of a cavity with amalgam and slaps a thin veneer of gold on top of that, and charges his patient for a gold filling.

I differ with the doctor in regard to the material best adapted for carving the cusps. I prefer modeling compound to plaster. It can be handled and carved with much less crumbling.

I wish the doctor had referred to the necessity of making solid cusps. The best of us occasionally find ourselves compelled to grind off a cusp to correct some little peculiarity in the articulation that we could not foresee. If we are forced to grind a crown which has the ordinary shell cusp on it, we are extremely liable to go through the thin plate of gold and expose the cement underneath, which means the failure of the crown within a short time. If you notice the section Dr. Goslee removed from the model bicuspid, which extended beneath the margin of the gum, you must have noticed that it had a certain amount of what I have termed gingival contour. This should be duplicated in the artificial crown. The plain band fitted on the root does not restore the

natomical situation; the gums present a far more natural appear-
nce and there is much less danger of gingival inflammation if we
ill contour the gingival portion of the band of the crown, and
ave it perfectly smooth and polished. Operators that I have
nown of, entirely ignore this precaution. I have seen crown after
rown the edges of which could be seen duplicated on any tin can
ound in any back alley. Speaking of cans reminds me that many
f the crowns resemble them rather than the natural teeth they are
ntended to replace, and I believe one may with perfect propriety
efer to many of the "crowned" teeth as "canned" teeth.

I am glad the essayist has endorsed most of the old simple
nethods, for there is no need of complicated methods, in crown
nd bridge work. Dentists devise wild, weird methods, oftentimes
s much to create a sensation, I believe, as for any other purpose.
They talk about them, prepare and read papers on them, and more
han nine-tenths of them are utterly impracticable. The simplest
nethods are the best; the best methods are the simplest.

Dr. B. J. CIGRAND: I thank you for calling on me and
rise to compliment Dr. Goslee on his paper; it is useless
o waste time in further commendation as we all recognize
ts merit. Dr. Perry in his remarks made one or two statements
which I think he did not mean; he said he wanted the gold crown
o go down and fill in the interproximate space. I believe he meant
hat we should reproduce the interdental space. I know that we
s a profession to-day are crowning too many teeth that might be
illed, and crowns should be the last resort to dental preservation.
have observed in my brief years of practice that conservative
entistry is the dentistry that will last, while the so-called "wild
at" bridge work has seen its best days, and humanity ought to
ay, amen. The spanning of a large bridge from the twelve year
nolar around the cuspid, or from the cuspid around to the other
uspid has been done too frequently and must be pronounced
nscientific. We have been going too far in our enthusiasm. I
ust confess that I remove a large number of the gold telescope
rowns and if these teeth had fallen into the hands of conscientious
perators the teeth could have been saved by some kind of filling.

We are learning more and more about dental prosthesis; we
re learning more and more about operative dentistry; we are
ust beginning to get into the portals of daylight as to how to pre-
are our cavities; and what is true of operative dentistry is *doubly*

true of prosthetic dentistry. We are realizing the truth in the point brought out by Dr. Noyes yesterday in his able paper, that there is too much machinery used in connection with the preparation of cavities. There is likewise too much machinery used in prosthetic work.

Another thing which impresses me is this: Many operators instead of producing their own gold telescopes and gold bridges, are sending them out to dental laboratories; and I am certain that by so doing the art of prosthetic dentistry will eventually fall into the hands of a few. I do not think this ought to be done, excepting in the most urgent cases when our time is limited and will not allow. Those of us who are crowning teeth with gold or porcelain, putting on Richmond or Logan crowns, should do these operations ourselves, or they should be performed under our own eyes and direction. I do not believe the laboratories can turn out this work as it ought to be turned out, since the patient is removed from them and their judgment of the case must be at fault.

Dr. Nyman has referred to ready-made crowns, and what he has said in reference to them is true. One word more and I will close. The subject of dental prosthesis has received too little attention at former gatherings of the Illinois society, and I am glad to know there is such an awakening in the *new art* of bridge work. There is a mechanical dentist, and there is a prosthetic dentist. One sends out for ready-made crowns, the other produces his own crowns. It is the purpose of every man in dentistry, and it is within the domain of every man in dentistry to have a general knowledge of the various branches of dentistry, and I do not believe in sending a patient from my office to that of another man unless I absolutely feel that I cannot do the operation. We all should try and make every effort possible to do the operation rather than to let a patient who comes to us pass into the hands of some other dentist. I believe our dental laboratories are a hindrance at the present day to true progress to prosthetic art. Every dentist should produce his operative results; likewise his own gold crowns, his own bridges and plates, and hence be the righteous "overseer" of the prosthetic work.

In conclusion, let me say that the Logan crown has not received the attention it deserves. I am a believer in the Logan crown when it is properly set, when you have a good strong root in the anterior six teeth—superiors, if the root is *properly* shaped and

emphasize the word properly, and the opening of the pulp canal is not made so large that you can throw an entire crown in, but that the canal is reamed out carefully and the pin absolutely and tightly fits in the canal; if you will then cement an intradental band into the root there can be no danger of root fracture. Now add a disk of gutta-percha, or chloro-percha at the contact surfaces of this Logan crown, and put a *sparing* amount of oxychloride of zinc or oxyphosphate of zinc, and carefully bring it into position; the cement will then be sealed in the canal, being thoroughly protected from the fluids of the mouth because of the disk of gutta-percha at the contact surfaces, and we know from clinical experience that gutta-percha resists the hydrochloric acid and lactic acid better than anything we can place in the mouth. I believe the Logan crown, therefore, properly adjusted, and placed in position, etc., stands out as the only champion of the reproduction of nature, being free from the display of gold and having no exposed bands to inaugurate the various pathological results; while the Richmond crown, with its innumerable shortcomings, is causing the dental profession the troubles they are now engaged in. I have discarded the Richmond in "individual" cases and in its stead use the Logan as described. Of course, in bridge work or assembled crowns, we are compelled to employ the Richmond since it is a combination crown having porcelain and metal, the latter acting as a convenient medium for attaching neighboring artificial teeth.

Dr. L. O. Green: We have listened to one of the most complete and instructive practical papers that has been read before any dental society for a long time. Such papers are few and far between. What we want are practical observations in crown and bridge work. Dr. Nyman seems to think that we have a great many inflammations produced at the gingival borders by broken carborundum disks, cement, etc. I think these inflammations are the result largely of lack of thorough cleanliness and in guarding against irritations. I agree with the previous speakers in many respects regarding what they have said of seamless crowns, Logan crowns, and porcelain crowns. A porcelain crown presents a very æsthetic appearance when it is properly adjusted.

Dr. Goslee (closing the discussion): It is getting very late, and I shall not make an attempt to touch upon all of the various points that have been brought out in the discussion. I wish to say a word or two along the line of thought mentioned by Dr. Cigrand.

namely, that entirely too many teeth are crowned. My idea along this line is, that no matter how perfectly a crown fits, no matter how skillfully it is made, it never takes the place of the natural one, or it never restores the normal condition around the gum line that the natural crown preserves. Wherever it is possible by the operation of filling or inlay work to restore the lost portion of the crown of a tooth and preserve the natural condition around the gum line it is far better.

I was first urged to condemn seamless crowns because I am firmly convinced they are but a fad. My good friend, Dr. Perry, is much interested in them and says that it is easier to make a seamless crown than it is to make a crown by any other process. I will challenge Dr. Perry to make a seamless crown in double the time that I could make one by the method I have described.

As to diamond disks being preferable to carborundum stones, there is less flaking with them, which is an objection to the thin carborundums.

I did not have time to discuss in the paper many of the smaller details that were dwelt upon by Dr. Nyman, because I had already consumed too much time. As to backing up teeth, I do not know exactly who it was that referred to it, but I believe it was Dr. Nyman, who said that he did not believe that such was the best method, or that it was too round-about a way. It does not make any difference how you do it so long as you accomplish the result mentioned in the paper.

Dr. Nyman referred to the gingival contouring bands, which is a very important feature. I will endeavor to illustrate this on the blackboard. (Here Dr. Goslee illustrated the method of contouring these bands.)

I am thankful for the kind remarks that have been made on my paper, and would like to have had time to go a little further but consumed all that I dared, and discussed those points that I thought would be of most interest to the members. If they have been so, I am very appreciative and truly thankful.

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GLOOMY.

In the May issue of the *Dental Digest* appeared a lengthy editorial in which the statement was made that fifty per cent of the graduates of dental colleges never enter practice. Just how the editor arrived at such a conclusion we are unable to determine. From our own experience as an examiner in previous years on the state board in Illinois we venture to assert that even ten per cent would be too high an estimate of those who abandoned the profession during the first year. In some cases men have been compelled from physical causes—imperfect sight, and weak lungs mostly—to enter other channels. The question of gaining a livelihood in the profession is at all times a serious proposition but not more so in dental practice than in other callings. If the writer of such pessimistic views will look over the field of literature, journalism particularly, he will find that lawyers, doctors, clergymen and others have recruited its ranks because they found themselves unsuited by their first choice of a profession. We consider it an evidence of good sense on the part of any one having a profession if such person finds he is unfit for the exercise of it. The idea that is advanced by the writer of the editorial above mentioned that the profession is overcrowded is absurd on the face of it. Not thirty per cent of the people know the value of dentistry and do not secure the services of dentists. The remainder are being educated and the dentists of the future will be required to care for them. Dental manufactories and dental depots are being started all the time. If there was no sale for their wares they would not thus bid for patronage.

We have been observing things in this country of ours for thirty years or more, and we unhesitatingly declare that there is more to

do every day now than there was in a whole week in 1870. The profession is not only prosperous but it is on the aggressive. If students are desirous of acquiring knowledge they can get it in the colleges, and much of the clinical work is done for little or nothing in order to give the students practical instruction. The members of the dental profession are to a large extent blamable for the supposed lack of suitable material in colleges. They do not in all cases send the best boys in the community and the colleges must do the best they can with such *timber* in sight. There is a gradual improvement in the educational qualifications of those who come from college doors, probably rapid enough to keep pace with the development of the whole country. Such an unparalleled advance in education as has taken place in the past fifteen years has never been equaled in any country where dental science is taught. The very gloomy picture drawn by the editorial mentioned is overdrawn and is not warranted by the facts, and the charges made are scarcely capable of proof. It has come to a pretty pass, indeed, when irresponsible utterances like these are taken for solid gospel truth by the unthinking reader. We are always ready to hold up the hands of the examiners' association and the faculties' association, too, when they are engaged in a work that will help to elevate the educational status of our members, but we do not believe all men are vile and dishonest and incapable.

The charge that infirmaries are run to make money and the other charges of like character are in keeping with the whole tone of the editorial. Guerrilla warfare of this sort is what causes older and more settled nations to hold aloof from recognizing the real advances that are being made along all lines of educational work. No stream has greater force than the sources from which it sprung and the assumption that all wisdom rests in the association of examiners or of the faculties even, is in keeping with the tone of the reflections indulged in by the self-appointed censor of dental politic and morals.

International Dental Congress.

The committee appointed by the N. D. A. at Omaha last year will hold a meeting Tuesday, August 1, at 4 P. M., at the Cataract House to consider any applications for clinical work at Paris and also for the examination of the titles of prepared papers or any other matters which may be brought before the committee. The

headquarters in Paris are beginning to boil in activity similar to that in Chicago in 1893. We expect a large attendance from the U. S. The congress will be held some time in August, 1900, about the first week as at present advised.

The National Dental Association.

The attention of our readers is particularly directed to the date of the meeting—Tuesday, August 1. Through an error in the *Dental Digest* it is erroneously fixed on the 14th. As may be seen we publish an amended programme. It is expected that this will be the beginning of a series of banner meetings.

DOMESTIC CORRESPONDENCE.

Letter from New York.

New York, June 7, 1899.

To the Editor of the Dental Review.

Dear Sir :—After a few very warm days early in June, we settled down here to regular New York weather, and, despite the cry, "everybody is out of town," most of our good men are still to be found in their offices.

The time for the annual meeting of the New Jersey State Dental Society is near at hand, July 19, 20, 21, at Asbury Park, as usual. The programme is a very flattering one. We have all "great expectations" for this event. Too much cannot be said for these good neighbors of ours. They are "workers," as well as "operators," and when they gather at the ocean front their hospitality is unbounded. We would like to say to our western friends who have never attended this society's meetings, that they will thoroughly enjoy this outing, if they can arrange to attend.

The Jersey local society, the "C. D. A. of N. N. J.," closed its season's meetings with the officers' dinner at Dr. C. S. Hardy's, in Summit, N. J., on June 10.

Its a way these Jerseymen have—and a right good way, too—in both the State and local societies to have annually an officers' meeting, with the president, at which plans are laid for the ensuing year, and various committees appointed, so that the work goes on without a hitch. These meetings are followed by an

elaborate dinner. Referring again to the coming meeting at Asbury Park, we note that "porcelain inlays" seem to have the call this year—and a great deal of clinical work in that line will be done. Dr. N. S. Jenkins, of Dresden, Germany, being the "leading light."

The thirty-first annual meeting of the New York State Dental Society, at Albany, in May, is considered by some to have been one of the best managed meetings in its history.

The president's address was quite radical. He said he was elected for *one* year, and intended to say just what he thought, even if it did distress a few. He is evidently of the opinion that object lessons are best for the majority of those who attend society meetings, for he made a strong plea for clinics, and cited the efforts of Parmly, Fitch, Hatch and a host of other educators who put forth their best efforts for the profession. He earnestly advocated an interstate dental license. He lamented the fact that less than fifteen per cent of the dentists of the State are enrolled in the societies.

He made a strong plea for the National Dental Museum, at Washington, D. C., stating that there is not a single exhibit there of any dental surgical operation.

Dr. Louis C. LeRoy, of N. Y. C., as chairman of the committee on practice, departed from the usual course, and gave a concise résumé of the newer ideas in practice as developed during the year, as anæsthesia of the tooth by "vapocain," et. al., formalin in medicine, pathological lesion of the mouth (syphilitic), and the gist from dental surgery, histology, etc., with references to Dr. J. Leon Williams' paper, "What Shall it be, the Scientific or the Empirical Method" as read before the N. Y. Odontological Society in January.

Dr. L. D. Shepard, of Boston, Mass., treated "The Dentists Posture" in an original manner.

He referred to the subject of mouth mirrors as presented before the American Dental Association twenty-seven years ago, in 1872, and claimed that in this age dentists do not use the mouth mirror as they should.

He passed around photos of his own person, as he appears in his office, in costume, and stripped to the waist. He shows up well in "bare skin." As Dr. Ottolengui said when discussing the paper, "If I had such a good broad back as Dr. Shepard I believe I would have it photographed."

He—Dr. Shehard—sits during operating. He uses a "spit-cup," denouncing the running water cuspidor as the worst thing ever invented for the dental office. Those who discussed the papers did not agree with the doctor on that point, however.

Dr. R. M. Sanger, of East Orange, N. J., read a paper on the fusing of porcelain with the electric furnace, but developed nothing new. The report of the "correspondent," Dr. Ottolengui, on "Interstate comity in the Enforcement of Dental Laws," showed a great difference of opinion on the part of dental institutions, in the exchange of courtesies.

With the exception of secretary, the old officers were reëlected.

The commencement exercises of both dental schools in N. Y. occurred about the middle of May. The N. Y. College of Dentistry, the oldest of the two schools, conditioned more than twenty-five per cent of its senior class.

A special meeting of the New York Institute of Stomatology was held Saturday evening, May 13, at the residence of the president, Dr. E. A. Bogue, at Montclair, N. J.

It was more of a social nature, than business, though some work was accomplished, in the rendering of the report on "Current Literature," by Dr. St. George Elliott.

The *regular* meeting of this society for May was at the office of Dr. J. Adams Bishop. Methods of wedging were described by Drs. Karl C. Smith, S. E. Davenport, and others. The use of fish line, grass line, or even floss silk, passed between the teeth near the gums, with knots to prevent being drawn through, and then the two ends brought over the grinding surfaces and tied together, sometimes with a small pledget of cotton between, seemed to be the favorite method.

The special topic for consideration was "Root Filling," and was a discussion of Dr. F. Milton Smith's paper "Immediate Root Filling," as read before the Institute in November, 1898. (See *International Dental Journal*, March, 1899.)

The particular text was this paragraph: "After one thorough treatment and at the same sitting, it is almost invariably good practice to fill the roots of pulpless teeth, provided the tooth is not too sore to operate on."

There were differences of opinion in regard to it—the majority being opposed to Dr. Smith. He has the courage of his conviction, however, and there are good men who agree with him.

The last regular meeting of the Central Dental Association of Northern New Jersey was termed the "educational meeting of 1899."

"Practical Bacteriology for the Dentist," was presented by Dr. Samuel A. Hopkins, of Boston, Mass. It was a concise, brief, instructive essay. His subject was so ably presented that it was readily understood.

Dr. Henry S. Nash, of New York, presented a paper on "Our Mistakes About Peridental Diseases," at the May meeting of the Odontological. This was his first appearance before any dental society. He apologized for his recent publication, saying that it got into press while he was sick. He has recalled the whole edition, and a new one is about to be sent out by the publishers.

The last *regular* meeting of the Institute of Stomatology was held at the office of Dr. C. D. Cook, in Brooklyn, June 13.

Prof. R. H. M. Dawbarn presented the subject for whom he had operated, removing the right superior maxilla. This case was shown by him at the April meeting of the Institute, before operating.

Dr. W. H. Potter, of Boston, Mass., read a résumé of a paper by Dr. Michaels, of Paris, France, on "Organic Hyperacidities and the Salivary Cyanides, which occasion Chemical Abrasion of the Teeth," subsequently presenting his own views on "Erosion."

Prof. Andrews, being unable to be present, his paper commenting on Dr. Michaels' views was read by Dr. Kimball.

The discussion by Drs. Thaddeus Hyatt, E. A. Bogue, L. C Le Roy, Geo. S. Allan and others did not settle the matter as t what causes "erosion." So some one must "try again."

Dr. L. C. Bryan, of Basel, Switzerland, visits his native lan this summer, and the institute's last meeting for the seaso will be in the shape of a dinner at the Hotel Marlborough, at 6:3 P. M., Monday, July 24, at which Dr. Bryan, as guest, will presen a report on the work proposed to be done by the advisory board of the foreign relations committee of the National Association o Dental Faculties, and in regard to the standing of American den tal diplomas in Europe. It is expected that this meeting, coming just after the New Jersey meeting and just before the meeting o the National at Niagara, will be a good, large one.

It is reported that Dr. Chas. E. Francis has removed from 3 East 47th Street to aristocratic Fifth Avenue.

Dr. E. Parmly Brown's International Dental Depot came near an untimely end June 7, when the entire floor beneath was burned out.

"Freeze out" seems not only to be a game played by western gamblers (*far* western, of course) but dental establishments right here in the "only" New York are apparently well versed in "ways that are dark."

Similar: Dr. W. L. Mason, of the Mason Detachable Tooth Company has been "frozen out" of his own company by business men *not* dentists, and loses the benefit of his own invention.

Before he was "frozen out," however, he had completed arrangements with H. D. Justi & Son, by which they are now making his removable facings, and in bicuspids and molars are giving some very artistic forms.

Will write you again from Asbury Park if all is well.

Yours truly,

MANHATTAN.

REVIEWS AND ABSTRACTS.

HYGIENE OF THE MOUTH. By R. DENISON PEDLEY, F. R. C. S., England, L. D. S. Illustrated. London: J. P. Segg & Co. Pp. 96. PRICE, $1.

This little book of less than a hundred pages is filled with valable and instructive matter relating to hygiene and prevention of ecay of the teeth. The illustrations look old but they tell the tory very well. It is a safe book in the hands of the dental stuent and the teaching is based on a correct knowledge of the varius diseases of the teeth and the mouth. This book might be laced in the hands of a nonprofessional reader with profit.

RANSACTIONS OF THE NATIONAL DENTAL ASSOCIATION, 1898.

This volume, issued by the S. S. White Dental Mfg. Co., in heir usual good form, has come to hand barely in time for a brief otice in this number. The report includes the transactions of the ssociation proper at Omaha, in August, and of the southern ranch, the preceding February, at St. Augustine, Fla. The tail ags the dog in this case to the extent of 200 pages out of 373.

By a shrewd provision in the new constitution, for three branches, two of which were to be created, but have not been, and probably never will be, the southern association is enabled to continue business at the old stand as if nothing had happened. We have no fault to find, but our southern brethren have once more demonstrated their superior talent for politics; they have reconstructed *us*, while *they* remain practically in *statu quo*. We can only smile upon them with admiration and say again, "*Shake!*" But imagine what the result would be with two more tails of equal length—a volume of proceedings covering 800 pages each year.

We cannot undertake a detailed review of the papers and discussions, nor would it be wise to discriminate by enumerating those we consider the best. The authors will please excuse us this once from any mention of names. The meeting at Omaha will go down in history, perhaps, as the least successful of the National Association. We sincerely hope that such a conspiracy of circumstances may never again thwart the plans of its promoters. The attendance out of all its membership was only 105, a less number than the average of the State societies of Iowa or Illinois.

It is not worth while, perhaps, to blame any one for this, for mistakes will occur in the best regulated societies as well as families.

As the writer has more than once suggested in former notices August is not a good month, but the very worst in the year for a live, scientific meeting of any sort. It is a period of enervation generally. It is a time impossible for the putting forth of the best energies of any association.

Add to this drawback a meeting place already crowded by an industrial exposition beyond its comfortable capacity; a quick grown babel of confusion, on a bare slope, where the forenoon sun beats down with terrific force in summer, with an exceptionally hot wave extending over the whole country at this particular time, and there is no marvel at the slim attendance. To those who bore the discomforts of railway travel over long distances, from a sense of duty and a determination to stand by the flag at any cost, all the more honor is due. The physical conditions of the situation are quite enough to account for the irritability with which certain papers were discussed, and items of business were treated. But all this does not account for the insufficiency of preparation, the work beforehand for the meeting. Some of the sections did nothing at

all, others very little, and not one came up to the best of its previous efforts. This is not saying that the proceedings were without value. Wherever some of our best men come together for the discussion of practical questions, it is inevitable that very good things will be said, and so it was here. And some of the papers read were very good, too; but on the whole we may say that there was nothing in the scientific character of the proceedings to distinguish the meeting from one of any respectable State or district society.

The report on literature was far less complete than that read before the Illinois society in 1899. The report on nomenclature was confined to the discussion of two words, "*cast*" and "*model.*" The section of operative dentistry had only one subject to consider, the removal of the dental pulp. The only thing on orthodontia was a paper replying to the critics of a former essay by the author. But the critics were there again, and only by strenuous effort did he get in the last word.

However, when all has been said, those who have access to the volume may find therein much profitable reading, and the proceedings of the southern branch are fully up to the average of the S. D. A. of former years.

The writer must repeat his expression of opinion in previous reviews, that the true office of the National Association does not consist in the consideration of minor matters, nor should it spend time "threshing over old straw," but rather in a review of works done by State and district societies, editors and writers, the discussion of matters of national and international importance, dental education and jurisprudence, and referred questions from local societies.

No attempt should be made to do a little something about everything pertaining to dentistry.' There should be only a very few papers read, and those of importance by the best qualified men along special lines and original investigators. These need not always be dentists, but eminent men of other professions, physicians, surgeons, pathologists, chemists, jurists, electrical engineers, etc., etc.

GARRETT NEWKIRK.

MEMORANDA.

Dr. G. V. I. Brown visited Chicago in June.

Oxide of zinc is a good polisher for a crown.

Dr. Lyman C. Bryan, of Basel, Switzerland, is visiting in this country.

Dr. Geo. J. Dennis was married to Miss Anna Bentley, of Chicago, June 2

Dr. C. L. Goddard, of San Francisco, has returned from a six months' tour i the Orient.

Dental Clippings is published at Houston, Texas, and edited by C. H Edge, D. D. S.

Why not use a paste of loretine made with eucalyptol for cankers and excoria tions. It is good.

Dr. Wm. Mitchell, of London, England, is in this country visiting relative and friends in Chicago.

Wisconsin State Dental Society meets in Madison, July 18, 19, 20, in th State Capitol Building.

The American Dental Society of Europe will meet in Brussels, August 7, 9, at the Hotel Ravenstein.

Minnesota State Dental Association will meet in Northfield, July 25, 26 an 27. A good programme is out.

LaRevue de Stomatologic for May has a new dress, and is edited by Dr. I Cruet. Paris. Price, 12 francs per annum.

Beware of the continuous use of corrosive acids. Many cervical cavities ar started in this manner and others are extended.

The New Jersey State Dental Society will meet July 19, 20, 21, at the Aud torium, Asbury Park. A good meeting is assured.

For summer reading Bowhill's Bacteriology is very good reading. All th new things and some old ones well described. $4.50 net.

The twelve year old son of Dr. M. L. Hanaford, of Rockford, was kille almost instantly on Saturday, June 17, under an electric car.

If you wish to know something about water get "Mason's Examination Water." Price, $1.25, cloth. It is an excellent and handy volume.

In California is a law to the effect that all editorials should be signed by th writer. In the *P. M. D. G.* for June there is no signature to "Radicalism Practice."

The profession in Japan is organizing for representation at the Internation Dental Congress of Paris, next year. A preliminary meeting of representativ of the various societies was held in Tokio on June 17, last.

Do you care for your instruments so that they are in perfect order when you ant them? This is said to be one of the serious faults of most dentists. Could ou take a motor apart and replace it, or even a handpiece? If you think so, y it.

At the late meeting of the British Dental Association, at Ipswich, a national mmittee was appointed to take charge of the delegation from Great Britain to e International Dental Congress, composed of Drs. G. Cunningham, Hopewell mith, Hunt, Dolamore Paterson.

National Dental Association.

The next annual meeting of the National Dental Association will be held at iagara Falls, N. Y., commencing on Tuesday, August 1, 1899.

Geo. H. Cushing,
Rec. Sec'y.

The Japanese government contemplates establishing a dental department in e Imperial University at Tokio, Japan, and with this object in view, the inister of State for Education intends to send one or two officials abroad, incipally to the United States and Germany, for the purpose of studying the ntal educational institutions of those countries.

It is estimated by Murrell that 15,000 infants die yearly in England from the e of "soothing syrups" and baby quieters. The United States probably rnishes an even greater number, as this is the land of patent medicines and strums When will we wake up and compel venders and manufacturers to e the substances and the quantities in all packages and bottles.

HUMOR.

As a gentleman stepped out of my chair the other day he said: "I do not e you—you have not made my gums bleed, or stuck an instrument in my tongue, broken off a tooth. Why, the last time I visited a dentist I was laid up for a ek. How much is your bill? Thank you, doctor. Please send for me when u want to see me"

DINNER TO DR. E. D. SWAIN.

Wednesday evening, July 5, Dr. T. L. Gilmer gave a complimentary dinner the Palmer House to Dr. Swain. Those present were Drs. T. L. Gilmer, E. Swain, G. V. Black, Edmund Noyes, T. W. Brophy, C. S. Case, P. J. Kester, R. E. Koch, W V. B. Ames, J. F. Mariner, A. W. Harlan and C. N. Johnson. Swain will shortly take up his residence in Seneca Falls, New York.

ALVEOLAR ARTHRITIS.

℞ Salicylate of Soda..... ..... 10 grammes
Antipyrine..... 5 "
Distilled water..... 20 "
Orange flower water.....180 "

M. S. A teaspoonful every quarter of an hour until three doses have been ken. If the first dose stops the pain do not repeat. This is for acute alveolar arthritis (pyorrhœa) with pus forming.

AMERICAN DENTAL SOCIETY OF JAPAN.

On June 3 last the above named society was organized by the graduates American dental colleges resident in Japan. The total number of those at t present is thirteen, five foreigners and eight natives. The society met at t Hotel Metropole in Tokio, and a very interesting discussion on various topics local interest were discussed. Meetings will be held once per month, and it the intention to have a paper at each meeting, and occasionally to devo an afternoon to clinics. Dr. Louis Ottofy, of Yokohama, was elected presider and Dr. T. C. Suganuma, secretary.

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The annual session will be held at Niagara Falls, N. Y., commencing at o'clock A. M., Friday, July 28, 1899, and continuing the 29th and 31st. T International Hotel will be the headquarters and the rates will be $3, $3.50 a $4 per day, according to location of rooms. As the sessions commence advance of the National Association, write ahead and secure rooms as membe of the N. A. of D. E. It is hoped that every State will be represented by de gates with certificates signed by the president and secretary of their respecti boards.

CHARLES A. MEEKER, D. D. S., *Secretary.*

NATIONAL DENTAL ASSOCIATION.

Railroad arrangements for meeting of the National Dental Association a not yet completed. A fare of one and a third fare on the certificate plan has be granted by some of the associations; have not heard from all of them, but thi within a week, will do so, and that all will grant this concession.

Wednesday, August 2, has been arranged as the day in which the spec agent of the railroad associations will be at meeting to qualify certificates. attending should be sure to get a certificate from the ticket agent when purch ing ticket going showing that full fare has been paid, otherwise they will not entitled to the reduction upon return ticket. Tickets for reduced rate wi l good going July 24 to 27 inclusive and returning not later than August 9.

Reports from secretaries of sections have not been received sufficiently d nite to enable us to issue at this time a complete literary programme.

J. N. CROUSE,
Chr. Ex. Com.

DENTAL COLLEGE COMMENCEMENTS.

The Medico-Chirurgical College of Philadelphia held its annnal commen ment May 20, 1899, in the Academy of Music. Prof. William L. Rodman, A M. D., conferred the degrees on twenty-one dental, 144 medical and five pharm graduates. The doctorate oration was delivered by Prof. Joseph M. Matthe M. D., LL. D., President of the American Medical Association. The gradua in dentistry were :

Robert Charles Bain, Canada ; Jacob Charles Bingel, Germany ; Van C Delos Burgess, Pennsylvania ; James Middleton Cornyn, Pennsylvania ; Emers Albert Dunbar, Louisiana ; Charles Milton Frantz, V. M. D., Pennsylvan Condy C. Gallagher, Pennsylvania ; August Philip Graf, Indiana ; Harry Hadley, Ph. G., Pennsylvania ; John Lincoln Hughes, Pennsylvania ; Ed Coleman Hoskin, Canada ; George Gould Lawyer, New York ; Gabriel Midd ton, Pennsylvania ; Michael Coleman Ryan, M. D., Pennsylvania ; George Oli

ed, Ph. G., Pennsylvania; Henry Louis Samelson, Tennessee; John Jacob tzer, Pennsylvania; Telesphore Gustave Turcot, Canada; A. F. Wehr, nnsylvania; Samuel McReynolds Wharton, Indiana; Charles L. Zimmerman, nnsylvania.

The commencement of the Western Reserve University Dental College was d in Cleveland June 15, at 10.30 A. M., in the Beckwith Memorial Church.

President Daniel C. Gilman of Johns Hopkins University delivered the address. esident Charles F. Thwing, D. D., LL. D., conferred degrees upon the follow- graduates:

Ross Willis Andrews, Arthur Dick Apple, Almon Lee Atwater, Liscomb lzell Auxter, Homer Aaron Baldwin, Varney Edward Barnes, George Bridge- n, William Edward Costello, Harry Poe Eaby, Leigh Lawrence Finch, Samuel ylor Gilmore, Emanuel Grossman, Frank Joseph Gunn, Jay Carleton Kelley, n Mistr, Charles Creighton Mottinger, Jay Kimmel Nash, Edward Lee Norton, ank Lyman Olds, James Alfred Rupert, Frank Watson Stevenson, Cameron bertson Stewart, Charles Edward Taylor, Oscar John Van Dorston, Samuel rshall Weaver, John Barton Webber, Charles Nelson White, Douglas Austin ight, Dan Hendrix Ziegler.

COLORADO STATE DENTAL ASSOCIATION.

A meeting of the Colorado State Dental Association was held in Denver, June 14 and 15, at St. James Hotel. Papers as follows: "Adjuncts to Steriliza- " Dr. E. R. Warner, Denver; "Advantages of Systematic Physical Culture," J. N Chipley, Pueblo; "Gold Filling," Arther C. Watson, Denver; "Anti- tics," Dr. J. M. Norman, Denver; "Dental Jurisprudence," Dr. F. F. Graves, nver; "Some Diseases Incident to First Dentition," Dr. Sarah May Townsend, nver. Clinics—"A method of treating pyorrhœa," Dr. W. T. Chambers; nserting cohesive gold filling with burnisher," Dr. H. T. Hoffman; "The use Ames' metalloid and oxphos. of copper," Dr. W. T. Chambers; "Some ures of germ life, using cultures and microscope," Dr. J. Carmody; "Moss gold filling," Dr. W. E. Griswold; "Articulating artificial teeth," Dr. S. Gilbert The attendance was about one hundred. Interesting discussions.

The visiting dentists were entertained evenings by the Denver dentists.

Next meeting will be held second Tuesday in July, 1900, at Boulder, Colo.

Officers elected: President, A. C. Watson, Denver; First Vice President, J N. ley, Pueblo; Second Vice President, Mary R. Bradner, Denver; Corresponding retary, Florence Green, Denver; Recording Secretary, L. S. Gilbert, Denver; asurer, Wm. Smedley, Denver. L. S. GILBERT, *Sec'y.*

RULES FOR HEALTH.

A publishing house in Paris recently offered a prize for ten of the most tive rules for the preservation of the mental and bodily health. Physicians, eons and scientists from all over the world took part in the contest, and over hundred competitors of renown submitted their ideas. Dr. Decornet, of te-sur-Aube, a French author and scientist, won the prize, his rules being:

1. General hygiene: Rise early, go to bed early, and in the meantime keep rself occupied.

2. Respiratory hygiene: Water and bread sustain life, but pure air and ight are indispensable for health.

3. Gastrointestinal hygiene: Frugality and sobriety are the best elixirs for a long life.

4. Epidermal hygiene: Cleanliness preserves from rust; the best kept machines last longest.

5. Sleep hygiene: A sufficiency of rest repairs and strengthens; too much weakens and makes soft.

6. Clothes hygiene: He is well clothed who keeps his body sufficiently warm, safeguarding it from all abrupt changes of temperature, while at the same time maintaining perfect freedom of motion.

7. House hygiene: A house that is clean and cheerful makes a happy home.

8. Moral hygiene: The mind reposes and resumes its edge by means of relaxation and amusement, but excess opens the door to the passions and these attract the vices.

9. Intellectual hygiene: Gaiety conduces to love of life, and love of life is half of health; on the other hand, sadness and gloom help on old age.

10. Professional hygiene: Is it your brain that feeds you? Do not allow your arms and your legs to become ankylosed. Dig for a livelihood, but do not omit to burnish your intellect and elevate your thoughts.—*Texas Med. News.*

NATIONAL DENTAL ASSOCIATION.

Second annual meeting to be held at Niagara Falls, New York, commencing August 1, 1899.

AMENDED PROGRAMME. Addresses will be delivered by L. E. Custer, Dayton, Ohio, on "Electricity;" T. W. Brophy, Chicago, and Thos. Fillebrown, Boston, on "Surgical Treatment of Cleft Palate."

As it is necessary for the sections to have their meetings and pass upon all papers before they are presented to the general body, we have not attempted to arrange the programme for each, simply announcing the sections in the order in which they will be called. Following is a list of the papers promised:

"Bacteriology and Plain Words with my Critics," J. Leon Williams, London; "Susceptibility and Immunity to Dental Caries," G. V. Black, Chicago; "The Abuse of Crown and Bridge Work," W. George Beers, Montreal; "Porcelain Enamel Inlays," Dr. N. S. Jenkins, Dresden; "Orthodontia" (Illustrated), Dr. Edward H. Angle, St. Louis; "The Absolute Efficiency of the Controllers on the Market for Dental Cataphoresis," Dr. W. A. Price, Cleveland; "Dental Electricity," Dr. L. E. Custer, Dayton; "The Practical Side of It," Dr. S. S. Stowell, Pittsfield; "A Bastard Profession," Dr. E. P. Beadles, Danville; "Cements," Dr. E. K. Wedelstaedt, Minneapolis; "The Reflexes of the Three Lower Molars," Dr. James Truman, Philadelphia; "Gomphosis," Dr. B. H. Catching, Atlanta; "Prognathism—Extraction and Delay versus Expansion and Early Attention (Illustrated), Dr. R. Ottolengui, New York; "Some Phases of the Cement Question," Dr. W. V.-B. Ames, Chicago; "A Study of Harelip and Cleft Palate" (Illustrated), Dr. Thomas Fillebrown, Boston; "Dies and Counter-dies," Dr. Robert H. Nones, Philadelphia; "Constitutional Deterioration the Cause of Dental Caries," Dr. Harvey, Battle Creek; "Oral Affections in Secondary Syphilis" (Illustrated), Dr. W. C. Barrett, Buffalo; "The Physiological Relation of the Adult Tooth Pulp to the Economy," Dr. C.

ungerford, Kansas City; "Etiology of Gnathic Abnormalities," Dr. A. H. hompson, Topeka; "Some New Points in the Anatomy of the Face and Jaws" llustrated), Dr. M. H. Cryer, Philadelphia; "The Present Status of Continuous um," D. D. Smith, Philadelphia; "Impressions and Models," C. D. Lukens, St. ouis; "Literary Requirements of Dental Students," Wm. Crenshaw, Atlanta; Dental Articulation and Occlusion," Wm. Ernest Walker, Pass Christian, Miss; Some Phases of the Dental Educational Problem," C. S. Butler, Buffalo; "Care Children's Teeth," C. N. Johnson, Chicago; "A Review of the Operative Den- stry in One Man's Lifetime," J. N. Crouse, Chicago; "Choice of Filling Materials r the Teeth Between the Ages of Eight and Eighteen," S. B. Palmer, Syracuse, Filling Superior Oral Teeth," D. D. Smith, Philadelphia; "The Text-Book and e Teacher," W. Storer How, Philadelphia; "Report of Therapeutic Progress," S. Cassidy, Covington; "Recent Advances in Therapeutics," A. W. Harlan, hicago; Counterirritation," W. E. Griswold, Denver;" The Radical Cure of Con- nital Cleft Palate" (Illustrated by cases in practice), T. W. Brophy, Chicago; The Pathology of the Pericemental Membrane," M. L. Rhein, New York City; Roentgen Rays," C. Edmund Kells, New Orleans; "The Results that Follow the xtraction of Permanent Teeth," E. A. Bogue, New York City; "The Significance Neuro-Dynamics in Oral Diseases," G. V. I. Brown, Milwaukee; "Why Dentists hould Recommend the Use of Brush and Water," Laurence Leonard, Waseca, inn.; "Models and Appliances," T. P. Hinman, Atlanta; "Classification and herapeutics of the Essential Oils," A. H. Peck, Chicago; "The True Function of diva," L. M. Cowardin, Richmond;" The Special Preliminary Education of the perative Dentist, "R. H. Hofheinz, Rochester; "The Uses and Limitations of For- aldehyde in Dentistry," F.W. Low, Buffalo; "Clinical Proof that the Dentine Can e Nourished After the Pulp Is Destroyed," Joseph Head, Philadelphia; "Porcelain lays," B. C. Russell, Keene, N. H.; "The Mixter-Smith Method of Reducing slocation of the Lower Jaw," M. C. Smith, Lynn, Mass.; "Gold vs. Amalgam," H. Johnson, Macon, Ga.; "Painless Dental Operations," B. Holly Smith, Bal- nore; "The Hygiene of the Dental Office," I. P. Wilson, Burlington, Iowa, Dental Hygiene as Applied to Public Schools," E. F. Adair, Harmony Grove, .; "Hygiene," J. A. Chapple, Atlanta, Ga.; "A Criticism on Pyorrhea Alveo- is," S. Freeman, New York.

OBITUARY.

DR. J. M. PORTER.

Died May 7, 1899, at Denver, Colo.

The Colorado College of Dental Surgery, recognizing the services rendered by Porter in the advancement of dental science, has adopted and ordered sent the relatives and dental journals, and spread upon its minutes, the following

Dr. Porter was born in Massillon, Ohio, in the year 1849. He graduated at the io College of Dental Surgery in 1872. In 1880 he came to Denver, Colo He s always been an active, conscientious worker for the advancement and eleva- n of his chosen profession.

He has at various times been connected with educational institutions and

examining boards, occupying positions of trust and discharging his duties efficiently and conscientiously.

At the time of his death he was an active member in the Colorado College of Dental Surgery and his genial countenance and cheering words will long be remembered by the many students who loved and honored him.

He was a member of the Colorado State Dental Association and the Denver Dental Society, the latter society having charge of the burial services. The dental profession has lost one of its most loyal supporters and earnest workers. The esteem and good will of the profession was evinced by the elaborate floral decorations and the large attendance at the funeral.

The dental profession recognizes its loss and keenly sympathizes with the bereaved relatives and friends. A. L. WHITNEY, *Sec'y.*

DR. I. C. ST. JOHN.

Dr. Immer C. St. John died June 3 at his father's home in Winona, Minn., of pneumonia.

Dr. St. John had been complaining of pains in the region of the heart for a month or more, yet was able to attend to his duties at his office until a week before his death. On May 11 he gave a clinic before the Illinois State Dental Society at the Infirmary of Chicago College, which, on account of illness, he was unable to finish, the final polishing being given by a friend; but he considered the trouble merely temporary, and refused to take a rest or to consult medical skill. On Friday, May 26, he took a slight cold, which developed into pneumonia, but was able to return to Winona on Tuesday, May 30. After that the progress of the disease was rapid, and on Saturday, June 3, he died.

Dr. St. John was born in Le Roy, Genesee County, N. Y., August 13, 1855. In 1866 his parents removed to Winona, Minn., where they, with a younger brother, still reside.

In 1876 he began the study of medicine in the office of Drs. Stuart and McGaughoy, but after pursuing that study for two years he concluded, at the instance of Dr. Lewis, now of Oakland, Cal., to make the study of dentistry his life's work. In 1880 he graduated with high honors at Michigan University, and the promise of exceptional ability which he gave while at that institution was fully vindicated in his practice in later years. After his graduation he practiced for a year in Winona, and then removed to Minneapolis, where his professional life has been spent. Dr. St. John was a warm friend, a generous rival, and a most conscientious and painstaking operator. His genial face will be greatly missed.

HENRY W. BALLUFF.

Henry W. Balluff, lately manager for H. D. Justi & Son, died at Littleton, Colorado, June 14, of tuberculosis. He was born December 29, 1865, at Freeport, Ill., and was an exceedingly bright and capable young man. His remains were brought to Chicago for interment. Mr. Balluff had one brother, Wm. H. Balluff, D. D. S., practicing in Chicago, to mourn his untimely death.

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ORIGINAL COMMUNICATIONS.

PROFESSIONAL ETHICS.*

BY EDMUND NOYES, D. D. S., CHICAGO, ILL.

The words morality and ethics are very close synonyms, and mean "the science that treats of human actions and mental affections considered as virtuous or vicious, right or wrong. The object of morality is human welfare, and the criterion of character and conduct from a moral or ethical standpoint is the influence for good or evil resulting therefrom." All men, whether they will or no, and whether they acknowledge it or not, are as truly subject to the laws of morality as to the law of gravitation, and no human being having intelligence enough to be responsible for his acts is free from the obligation to *be* good and to *do* right.

There is no better statement of the fundamental rule of ethics than Christ's summary of the second table of the law, "Thou shalt love thy neighbor as thyself."

The requirements of this rule and its applications to political, business, professional, social and family life, in the exceedingly complicated relations and imperfect adjustments of our modern society, should be the subject of most careful study and earnest endeavor by every man and woman. The indispensable preliminary and foundation for this is soundness of moral character and a sincere desire to overcome selfishness, and to coördinate personal advantage with the general welfare by the choice of such employments and by such conduct of life generally as may result in the greatest good to those within the sphere of our efforts and influence. Selfishness may be defined as the sacrifice of the welfare of others to promote our own, or obtaining

*Read before the Odontographic Society of Chicago, June 19, 1899.

benefits for one's self by depriving others of greater benefits o by their positive injury.

The choice of employments and occupations by which me and women gain their livelihood ought always to be made with ref erence to the service to be rendered as well as the compensatio to be received, and all occupations must be regarded as immora if the results of the employment or the business as conducted ar injurious in their usual and ordinary effects. Business or employ ment which encourages or provides the means of indulgence fo the vices and immoralities of men is of course immoral; so also i business which levies toll or takes contributions from people with out performing any useful service, and this is one of the funda mental objections to all the forms of gambling. Adulterations deceptions and misrepresentations by which good money i obtained for worthless stuffs must fall under the same condemna tion.

The obligations to be honest and truthful, and to perform use ful service, are upon all men and women, whether they be high o low, rich or poor, in whatever station in life they may be and how ever they may employ their time or money. The essence of mor obligation is the same for all classes and conditions of me namely, that conduct shall promote the welfare of those affecte by it. The requirements of morality must vary however with th circumstances and relations in which people live and work; ar professional ethics, business ethics, social, political, internation ethics, etc., become important subjects of study and determin tion.

Morality has been a slow growth, resulting from the observ tion of results following conduct which are supposed to be goo and a great body of laws, rules, maxims and habits have be accumulated, which, like all things human, are in some respe imperfect, inadequate or misleading, but are for the most part correct that we may rightly follow them, reserving the habit of independent judgment as to their application, and the special oc sions in which they should be ignored or transgressed.

The duty of morality is greater, the motives more urgent, a the penalties for evil conduct more severe in some employme and situations than others. It is of more consequence to the co munity, and therefore a more important duty, that a bank cash should be honest and truthful than that an Italian peanut vende

the street should be so. It is more important that a surgeon be skillful and conscientious than that a jeweler should be so; though it is true that both *ought* to be. The interests intrusted to professional men are more important, and the consequences of incompetence or dishonesty more serious than is usually the case with business men and mechanics. It is proper, therefore, that the community should expect, and the professions should seek to maintain in their ranks, a higher standard of fitness and training, a better education, greater general intelligence, and above all a higher standard of moral excellence and more scrupulous conscientiousness than is expected or exacted from other classes.

For our present purpose we shall get a better idea of professional morality by some brief comparisons with business morality, and this is especially desirable because of the tendency of some men to conduct a profession as if it were a mercantile or manufacturing business, and because the distinctions appear to be rather vague and uncertain in the minds of many, if we may judge by their speech and conduct.

In business transactions (and in this they do not differ from professional services) it is expected that all the parties shall receive benefit. If this is not the ordinary and expected result the business is not legitimate nor honorable; but in business, men are supposed to meet on equal terms, both parties being sufficiently good judges of the transactions, and each expected to look after his own interests.

On the contrary, a professional man and his patient or client do *not* meet on equal footing, but it is distinctly understood that very important interests and welfare are confided to the professional man, the other party being comparatively helpless and unable to judge if the measures adopted are such as will best serve his needs.

It is true that in business it sometimes happens that one party has expert knowledge of qualities or values and the other has not, and then it becomes the duty of the expert to have a care to make the transaction beneficial to the other party as well as himself, if he can, and especially he ought to refrain from taking advantage of the other's ignorance to his injury.

A high standard of morality requires that both business and professional men have some care for the welfare of both or all the parties to the transactions in which they engage. The difference

may be stated in this way: It is expected of the business man, and is right, that he give primary and chief consideration to his own interests and profit, and it is expected, and is right, that a professional man should give primary and chief consideration to the welfare of his patients or clients.

In business the matters of chief consequence are the *things* or commodities bought and sold or manufactured, the personal services of those engaged having reference primarily to the commodities, and only secondarily to those who buy or use them.

In the professions, however, the chief importance attaches to the personal services and the professional knowledge and skill, on the one hand, and the personal needs of the patient or client on the other, and the personal services or labor are bestowed directly upon persons instead of commodities. In these two considerations, if anywhere, is to be found the reason for the claim that the professions stand upon a higher plane morally than business and manufacturing pursuits. Men are better than things, and those who serve them directly, by the care for their health and lives, the protection of their rights or the cultivation of their minds, manners or morals, have a somewhat more responsible service and higher moral obligation than those who supply the commodities which satisfy their wants or minister to comfort and taste.

The attitude of the professions toward the question of advertising is also explained, in great part at least, by these same distinctions between a profession and a business. A man may advertise *things* with the utmost freedom if he does not misrepresent them; but there is almost universal opinion that the public, paid advertisement of personal character, attainments and skill, is improper, in bad taste and not consistent with personal self-respect or professional dignity.

The rules of the medical and dental professions in respect to advertising are strict and somewhat arbitrary, that is, they forbid announcements to the public by certain specified methods, but permit the accomplishment of equally effective notoriety by other and indirect methods which some men find it easy to avail themselves of and others are unable to use at all. Some men appear to think that greater hardship or even injustice is caused to them by this than is really the case. It is not reputation or even notoriety that are important from the standpoint of professional ethics, but the methods by which it is obtained and the correspondence,

want of it, between the reputation and the personality that receives the benefit of it.

Of course it is not absolutely certain that a set of definite rules or customs for the conduct of a profession that have gradually developed through many generations, and also the general consent of opinions which are effective for their enforcement, are infallibly correct, morally, but there is an enormous presumption in their favor which is strengthened by observation of the men who conform to these rules and those who transgress them, and by noting the injurious effects of the usual forms of quack advertisements both as regards the service to the public and the effect upon the professional character of those who practice.

Both the medical and dental professions are very sensitive on this subject, and no other breach of morality will so quickly and surely cause a man to be ostracized by his professional associates and cut off from all professional societies. Moreover the advertisements themselves, of both dentists and physicians, are so commonly untruthful or misleading and the practice they represent so often incompetent and unscrupulous that advertising has come to be looked upon as the badge of quackery by the community as well as the professions, and the man who descends to it must expect to find the better class of people shunning him. That is to say, the gaining of an advertising practice causes the loss of such people as go to reputable men.

It must be allowed that the announcements to the public by the dental schools respecting their infirmary clinics are to be classed differently from the advertisements of private practitioners. They are conducting a special form of practice, in a special way for a different purpose from that in view in any other dental practice, and they should be allowed to announce the special features of it for very much the same reasons that one who limits his practice to a particular class of cases is allowed to inform the profession and the public as to his specialty; but if we have a right to ask (I do not say *expect*) that business advertisements shall tell the truth and not misrepresent goods, much more may we demand that the colleges make their advertisements and announcements correspond exactly to their performances. If they are able to get a considerable net income from their clinic we have a right to complain loudly if they announce "charges for cost of materials only."

If they announce, "professional services free, a small charge

will be made to cover part of the expenses," or something similar to that, I do not see that objection could be made. It is of most urgent importance that the entire conduct of a dental school, on the professional side and the business side, should conform to the highest standards of morality. Not otherwise can it fulfill its obvious duty of instruction and influence for the highest standard of morality in the subsequent practice of its students. Much complaint has been made because the colleges do work for many well-to-do people, and it must be granted that it is unfortunate for the practitioners in the same city that they should do so, but on ethical or moral grounds no very sound objections can be made as matters now stand. The schools *must have* patients in order to teach their students, and it is hard to say why we should interfere with the personal liberty of such people in the community as are willing to take the chances of such treatment.

If a practical scheme can be devised by which the college clinics can be filled full of poor people to the exclusion of the rich consistently with the best teaching of students, it will be most welcome to the colleges, the profession, and probably the public.

The primary object in the practice of dentistry, that for which the profession exists, is the welfare of the patients committed to our care. Professional morality has always this fundamental purpose.

It is true that the welfare of patients must be coördinated with the necessity to earn a livelihood, with the upholding of the honor and dignity of the profession, and with fair and generous treatment of fellow practitioners; but the welfare of patients is paramount, and if other duties conflict with this they must yield first and to a greater extent.

Every man understands the attitude of mind which looks over a new case with a view solely to see what plan of operations will be most profitable to himself or most conducive to his reputation and every man comprehends also the intention to carry out such plans and operations as will result in greatest good to the patient but not every man realizes as he should that the first is as unprofessional as it is selfish.

It is not possible or necessary to say much of the requirement of morality in treatment of patients in detail. The elements of personal service and professional knowledge and skill should always be kept in view, and patients should not be allowed to trea

professional man as they do a tradesman. Some of them expect o get advice and estimates of cost from several men, and have no dea that any charge will be made by any except the one they hoose to do the work, and do not expect him to charge for the dvice and examination. Such people are not nearly so numerous as hey used to be, and of course dentists are chiefly responsible for uch as there are. Nobody expects to treat physicians or lawyers n that way, and dentists who encourage it class themselves as killed mechanics instead of professional men.

"No trouble to show goods" is a maxim of trade only, and "examinations and consultations free" is one of the "ear marks" of a quack.

There is but little use in a description with much detail of the equirements of professional morality in the treatment of other ractitioners. No man can avoid transgression unless kindness nd charitableness are rooted in his character and find constant llustration in his conduct. It is of course proper and necessary hat we form our own opinion of the professional ability and skill f other practitioners whose work we see or whose voices we ear in the discussions of our societies, but much care and many llowances are often necessary or we shall hold men in lower stimation than they deserve. Experience and *remembrance* of our wn misfortunes, misjudgments and failures is a great help, and ose who have been some years in practice are usually more haritable and more just to others than very young and inexperinced men.

It often happens that operations which come to us showing artial or complete failure may have been made under extreme r insurmountable difficulties of which neither the present condion and appearance of the mouth nor the present behavior of the atient offer the least intimation.

Reputable men are to be supported in their practice and their putation defended unless the welfare of some patient or of the ublic will certainly be endangered thereby. There is nothing etter under almost any circumstances than the truth, but the hole of it need not be spoken at all times; and it is my belief that generous judgment of other practitioners is more often correct an a harsh one.

Advertising quacks have not the claim upon us of professional

brotherhood, nevertheless particular operations made by them should not be condemned unless they are bad.

The dental profession of the present day has received a rich inheritance from the past in a great body of professional knowledge, skill and experience, as well as a vast amount of ingenious apparatus and instruments, accumulated and tested by our predecessors and transmitted to us ready for our use. The natural impulses of gratitude, therefore, as well as the plain obligations of morality should lead every one to make suitable acknowledgment of this obligation by the utmost service to his profession that his abilities and opportunities will permit. It is impossible that any man can do so much for his profession as the profession has done for him.

Poisons.*

By A. W. Harlan, M D., D. D. S., Chicago, Ill.

I do not remember having read anywhere the above title as one that has been presented to a dental society for its consideration.

A poison is defined as being "A substance that destroys the functions of the various organs by action other than mechanical. endangering or arresting vitality." (Gould.)

"A substance capable of producing noxious and even fatal effects upon the system, no matter by what avenue it be introduced; and this, as an ordinary result in a healthy state of the body, and not by a mechanical action." (Reese.)

Orfila has divided poisons into acrid, irritating, corrosive or escharotic, such as acids, alkalies, mercurial, arsenical, cupreous and antimonial compounds, cantharides, etc.; narcotic, acting on the brain, as opium, cannabis, hyoscyamus, piscidia, etc.; acro narcotic, acting on the brain, spinal marrow; irritant to the parts aconite, belladonna, etc.; septic or putrescent, venom and virus from the animal kingdom. Then there are narcotics producing giddiness, headache, numbness, so-called destroyers of pain like the newer coal tar products, antifebrin, sulfonal, ammonol, acetanalid and nitroglycerine, trynitrin, etc.

For the purposes of the dentist a knowledge of the methods of treatment of such poisons as he may be in the habit of daily using i

*Read before The Chicago Dental Society.

what is most needed. The statement is true that such information can be gotten from books, if they are at hand, but oftentimes they are not, and then he must depend on his own resources. I well remember that many years since I painted the gum over the root of a large molar with tincture of aconite root (Fleming) and perhaps used more than I would now, and in two minutes my patient was poisoned. He became pale and clammy, commenced to give a dry cough, was cyanotic in a moment, fell limp and moist backward in the chair, and I was much frightened. Somewhere I had read that laudanum might be used in such cases. I gave him twenty drops and repeated it in a few minutes. Laid him out on the floor, gave ammonia by inhalation, used friction, and in thirty minutes he was all right. The books do not say anything about opium as an antidote, but I learned from this that it was useful. Digitalis, atropine, nitrite of amyl, hot water bottles, stimulants are laid down among the remedies to be used.

We constantly use such agents as sulphuric, nitric, carbolic and chromic acids, zinc chloride, silver nitrate, cupric sulphate, etc. The treatment for poisoning with such agents differs widely. For mineral acids, use alkalies, soap, limewater, magnesia, potassium, carbonate of soda or chalk, milk of magnesia, plaster from the wall. The demulcents, slippery elm (acacia), gumarabic, flaxseed tea, subnitrate of bismuth, morphine to prevent the shock, one quarter to one-half grain, better one-quarter and repeat in fifteen minutes than to use all at once. Milk and albuminous mixtures are always soothing after such corrosives are used. All vegetable acids, such as lactic, acetic, trichloracetic and the like are antidoted with alkalies and the demulcents, but in addition the stomach pump may be used and large watery emetics, like warm salt water, mustard water, etc. These are made better when they are made oily; the more rancid they are, the better. If anything will nauseate, it is a salty, oily mixture of lukewarm water or mustard. (It must be remembered in these cases that there is no paralysis of the reflexes.)

Large volumes of water, if nothing better, will dilute all mineral and vegetable acids, if nothing else is at hand which will be advisable to use.

In the face of a case of poisoning presence of mind is of the utmost importance.

Such poisons as carbolic acid and creosote, resorcin, and anal-

ogous coal and wood tar compounds are to be met locally with vinegar, soluble sulphates, oils, lard, linseed or machine oil. Soap, lime (from the ceiling), saccharate of lime is better. One day (1875) I was injecting an abscess with ninety-five per cent carbolic acid and it squirted back over my face and into my eyes blinding me for a time. I reached over to the operating case and emptied a can of machine oil into my eyes and smeared my face with it and then groping my way to the sink I used soap as rapidly as I could and in about an hour I was comfortable and the next day was at work as usual.

I spilled some acid by accident on a lady's face one day and at once used some vinegar and then more vinegar and in two days no one would have known that ninety-five per cent carbolic acid had burned a space larger than a twenty-five cent silver piece.

Some accident may happen to you with nitrate of silver but if the salt box is handy you need have no fear, as it will perfectly antidote it at once. In all cases it must be borne in mind that the demulcents and slippery substances should be used as protectives, for nature must have a chance.

Glycerine is not a good antidote for carbolic acid or creosote poisoning. Alcohol is not very useful as it is only a solvent and causes them to spread which is very bad and will frequently leave a scar. These agents coagulate to and through the Malpighian layer of the skin or mucous membrane and they must be antidoted quickly or there is much disfigurement.

Such agents as caustic soda, potash or sodium ethylate, which a dentist is likely to use, are easily antidoted by using vinegar, acetic acid, citric acid, lemon juice, orange juice, soft substances afterward, as white of egg, gruel, milk, barley water, oil, olive or castor, or sweet, or salad oil. In such cases it must be remembered that the system is given a shock which must be met by opium or quinine or stimulants, local or constitutional. Digitalis in small doses, $\frac{1}{100}$ gr., is good. Hypodermics of brandy or gin are good. It is not expected that we should treat anything but accidents and not many will be found in an ordinary practice.

In all cases where it is believed or suspected or known that a poison has been swallowed, then it is necessary to use an emetic save in acid cases (like nitric or sulpuric), local or hypodermic. If the zinc salts are available, the sulphate is probably best (ten to

hirty gr. in tepid water, or forty to fifty gr. of ipecac in powder). This is much better than the wine of ipecac.

Sulphate of copper is a good emetic but zinc or ipecac are better, however. Of this five to ten gr. in a half pint of warm water, o be repeated in ten minutes.

Apomorphia is the most certain emetic. $\frac{1}{24}$ to $\frac{1}{16}$ of a gr. hypodermically. As the ebonite salvationist says, "It will move when ll else fails." This may be repeated in fifteen minutes. (Once a lentist used the contents of a cuspidor to produce emesis and it did vell, after zinc had failed and warm mustard and alum water.) I vould not hesitate at using anything to rid the stomach of a poisonous dose of any drug at any price if the patient could be saved. All such drugs as sulphonal, antipyrin, ammonol, acetanelid and he hypnotics of that class are antidoted generally by using strychnine or digitaline; or the tincture of the above, $\frac{1}{60}$ gr. of the former nd $\frac{1}{100}$ gr. of the latter, hypodermically.

In regard to opium and its alkaloids, the discovery of Moor, bout three years ago, gives us a certain antidote when opium is aken into the stomach, after using the stomach pump and metics, about five to eight times as much permanganate of potash n water is given. This oxidizes the opium or morphine and enders it inert. If the morphine has been injected, the rectum nd stomach are to be used for the antidote.

Recently an overdose of opium was given to a child two years f age, and as the permanganate did not seem to act in the tomach, three ounces of a ten per cent solution was injected into ie rectum and kept there by compression and the child recovered.

In case of poisoning by alkaloids in general, per the stomach, must be remembered that tannic acid is the best antidote, three five times the quantity of the bulk of the poison being fficient. Then inhalation of stimulants, warmth over the stomach, agellation, movement in case of drowsiness. Coffee, hot and lack, per stomach or rectum.

Cocaine and eucaine are poisons which many dentists are sing daily. It is stated that volasem is the antidote, but I have ot been able to obtain any, so I cannot tell from personal use hether it is good or not. Amyl nitrite, coffee, and persistent use ammonia, camphor and active motion I know to be useful, as I ave had experience in that kind of poisoning.

For corrosive sublimate the best remedy is egg albumen, but

in the absence of eggs, blood is the next best (kill a dog or cat and get it that way).

If you should use aconite in a poisonous dose it is well to remember that atropine or even the tincture of belladonna or the liniment could be used to antidote the aconite.

Arsenic is so commonly used that it seems needless to say that iron (dialyzed) can be used locally and per the stomach. The hydrated sesquioxide is probably best. If iron is not handy, then magnesia in warm water, or milk of magnesia. (All poisons when taken into the stomach are to be ejected by means of emetics if possible.) Many of the corrosive poisons produce such a profound shock that injections of morphine are necessary to produce quiet.

In all the forms of narcotic poisoning, an injection of twenty grains of caffein in a half pint of hot water into the rectum is advisable for a twofold purpose, as it takes the place of brandy or other stimulants and is more effective. Murrell says that a one per cent solution of nitroglycerin in alcohol, two to five minims hypodermically, acts as a great stimulant.

In chloral poisoning, coffee per rectum and strychnine hypodermically with heat, aromatic vinegar, ammonia acetate (liq. one-half to one oz.), mustard on the stomach.

In nearly all cases of poisoning by the various pain killers, liniments, headache powders and soothing syrups, a compound antidote is offered by Murrell as follows :

℞. Saturated solution of sulphate of iron.... .....100 parts.
Water..... .....800 "
Magnesia..... 88 "
Animal charcoal..... 40 "

The iron solution is to be kept in a bottle by itself and the magnesia and charcoal are to be mixed with water and kept in another bottle. When you are required to use this they are mixed and well shaken and administered in frequent doses of half a tumblerful at a time. This has no effect on alkalies, phosphorus, antimony or hydrocyanic acid. The latter is to be antidoted with emetics, stimulating inhalants and one-fiftieth gr. atropine, hypodermically, warmth, hot and cold douches, etc.

The iodine compounds are antidoted with starch, arrowroot gruel, barley water, amyl nitrite, and morphine to relieve pain.

Mushroom poisoning has some domestic interest for all who have families. Emetics, castor oil one to two ozs. afterward, and

ither twenty drops of belladonna or five minums of one in fifty olution of atropine, hypodermically, and stimulants, as ether vater, chloroform water, brandy, etc.

The various zinc compounds used by dentists are antidoted vith potassium or sodium carbonate or washing soda, well diluted. All alkalies used as antidotes should be well diluted with water. Egg albumen, milk, slippery elm, and dilute tannic acid in water, morphine to control pain, one-half gr. hypodermically.

A paper on poisons could be strung out to an interminable ength; such is not my purpose to-night. I do not claim to have covered the field at all. The anesthetics have been left out purposely and the poisons produced by decomposition of meat, milk and the septic poisons, the poison of serpents, tainted fish, etc.

In conclusion I quote a recent definition of the legal aspect of poison by an eminent pharmacist as a basis for the classification of poisons in the forthcoming pharmacopeia.

"Much has been said for and little against the proposition of he adoption of maximum doses in the next issue of the pharmacopeia. The opinion now prevails that this will be done, and no doubt such addition will prove of great advantage to physicians nd pharmacists alike. If this can be done, why cannot the pharmacopeia also state what drugs shall be considered as of dangerus character, based upon the maximum doses in which they may e administered? It can be argued that in the past it has been the istinct desire of the committee of revision to recognize only such ubstances as are of sufficient remedial value to deserve space in he pharmacopeia, and that there are a great many substances of oisonous character which have not been found deserving of such istinction. While this is no doubt true, it must be acknowledged hat the committee have no need of precedents in order to add to r omit from their scope of usefulness, and if they deem it proper r necessary to separately or collectively define what shall conitute a poison, it certainly lies within their province to do so, hether all substances coming within that ruling are or have been herwise officially recognized or not.

"In order to determine more clearly the sense of the preceding nes and to illustrate the idea set forth therein, a rough classificaon such as the pharmacopeia might adopt is appended below.

"CLASS A.

"Hydrocyanic acid, compounds of antimony, arsenic, mer-

cury (except calomel), silver, cyanide and sulphocyanide, nitro benzine, oils of tansy, croton, pennyroyal and savin. Phosphides phosphorus, wood alcohol, cocaine, chloral, apomorphine, aconite belladonna, cotton root bark, conium, cantharides, cannabis indica colchicum, digitalis, duboisine, ergot, fish berries, gelsemium, black and white hellebore, hyoscyamus, ignatia, nux vomica, opium poison oak, pilocarpus, physostigma, strophanthus, stramonium veratum viride, elaterium and their active principles.

"All other drugs and chemicals the maximum dose of which is one decigram or less, as given in standard works of pharmacy.

"CLASS B.

"Acids, carbolic, hydrochloric, nitric, nitrohydrochloric, concentrated phosphoric, oxalic, picric, sulphuric. Aqua ammonia all strengths. Compounds of barium, copper, cobalt, and soluble compounds of lead and zinc. Potassium and sodium hydrates. Bromine, iodine, bitter almonds, creosote, chloroform, ether, essential oils of mustard and bitter almond.

"The term compound as applied in Classes A and B refers to chemical combinations.

"While such an arrangement and definition of all that shall be considered of poisonous character is not perfect, the writer contends that it is an improvement, and leaves room for severe criticism only in making a dividing line for all such not specifically mentioned as those the maximum doses of which are 0.1 gram or less. It must be admitted, as a matter of course, that there are some active principles and synthetic compounds, the dose of which is more than 0.1 gram, that would possibly be considered as dangerous, but, on the other hand, these are such that if the limit line would be put at 0.2 or 0.5, some of most harmless nature would be included."

If we are careful in the use of dangerous classes of drugs no case of poisoning would ever occur; but where a prescription is given, or a box of powders or pills are handed to a patient without precise instructions, danger lurks there every time. In the local use of drugs, it seems to me that no danger should be incurred by any patient, as the known safe dose is so readily obtained that he must be careless indeed who would exceed it.

NOTE.—A desire having been expressed for an antidote bag, I have had it selected from Murrell as under. Also one general antidote from Culbreth.

ANTIDOTE BAG.

Mr. Martindale, of 10 New Cavendish Street, London W., has for some years past, made a bag which answers the purpose admirably.

It contains in a morocco bag a hypodermic syringe, a case of solutions, and a series of chemical and physiological antidotes. The following is the list of medicines: Dialyzed iron, syrup of chloral, chloroform, aromatic spirit of ammonia, spirit of chloroform, French oil of turpentine, acetic acid, tincture of digitalis, nitrate of amyl capsules, sulphate of zinc, ipecacuanha, bromide of potassium, calcined magnesia, tannin. Hypodermic injections of: Strychnine, morphine, atropine, apomorphine, pilocarpine.

Its price is five guineas ($25). A larger bag suitable for hospitals contains an additional supply of drugs, a catheter, a lever stomach pump, etc.

THE BURROUGHS' ANTIDOTE CASE.

The Burroughs' antidote case, made by Messrs. Burroughs, Welcome & Co., London, is wonderfully useful and compact. It contains a stomach tube of novel construction, Wyeth's dialyzed iron, sal volatile, French oil of turpentine, and tabloids of sulphate of zinc (ten grains), chloral hydrate (ten grains), and bromide of potassium (ten grains), with capsules of nitrite of amyl. There is also a hypodermic syringe fitted with a cap, a glass mortar and pestle for dissolving the tabloids, and a case of tubes for hypodermic use containing tabloids of apomorphine (one-tenth of a grain), sulphate of morphine (a quarter of a grain), sulphate of atropine (one-sixtieth of a grain), hydrochlorate of pilocarpine (one-third of a grain), sodio-salicylate of caffeine (half a grain), sulphate of strychnine (one-sixtieth of a grain), digitaline (one-hundredth of a grain), and aconitine (one hundred and thirtieth of a grain). It measures about eight inches by three, and when full weighs less than two pounds. Its price is two guineas ($10), complete. It is a capital case and is a marvel of compactness and cheapness.

JEANNELS' GENERAL ANTIDOTE.

This is employed where the nature of a poison is doubtful.

℞ Liquor ferri tersulphatis..... ℥ijss
Magnesii oxidum..... ℥ij
Carbo animalis..... ℥i
Aq. fontana..... ℥xx

M.

Keep the last three ingredients mixed, and add the first when needed.

Doses: ℥ij to ℥iij. Repeated if necessary.

Report of the Supervisor of Clinics at the Thirty-Fifth Annual Meeting of the Illinois State Dental Society.

By L. W. Skidmore, D. D. S., Moline, Ill.

The supervisor of clinics begs leave to report as follows:

BY DR. J. B. BROWN, BLOOMINGTON, ILL.

No. 1. Patient. Left central. Bleaching, using twenty-five per cent solution of pyrozone and hot air, bringing it out in forty minutes to quite its normal color. 2. Left lateral, badly discolored, using same process and the same results with thirty-five minutes time.

BY DR. H. B. BULL, FAIRBURY ILL.

No. 2. Bevel facing from near pins to the cutting edge. Burnish pure gold backing on facing. Bend piece of 22 k. gold thirty inch gauge about the size of the backing, remove the first backing, place the two together and catch with solder; replace on facing and place on articulator; bend second backing on a line with the cusps, remove and fill between with solder, replace and try cusps for articulation; catch cusps and backing with wax then put in pliers and solder. Replace on facing, bend pins down, finish cutting edge, and tooth is ready for investment. Advantage: Easy and perfect articulation, easy to finish and less liability to fracture.

BY DR. JAMES W. CORMANY.

No. 4. Patient, G. S. Spear. Gold filling in anterior proximal surface of the left superior central, using Bonwill mallet No. 2. This was a large filling occupying at least one-third of the tooth. It was well anchored, and packed and condensed as well as the electric power would give and in spite of the current being off part of the time the doctor prepared, filled and finished the filling in sixty minutes.

BY DR. S. FINLEY DUNCAN, JOLIET, ILL.

No. 6. Attachment for bridge to anterior teeth without amputation of natural crown.

Drill into the natural tooth on the lingual surface, devitalize and remove pulp. Enlarge pulp canal to receive a square iridic platinum wire, sixteen gauge. Countersink opening and cut groove or slot to the side next the bridge-tooth, beveling the edges carefully. Into the countersink and groove burnish pure gold plate, thirty-two gauge. Through this pure gold insert retaining post into pulp cana

emove post and gold plate together and solder together, using 22 k. solder. Replace in tooth and burnish again to be sure of accurate adaptation and trim flush with margins. Remove again and fill with 22 k. solder; replace in tooth, take impression, run model, grind up dummy and solder to attachment and cement in place. This operation can all be done with the rubber dam in place which is a very great advantage, especially when cementing into position, as everything can be kept perfectly dry until the cement hardens thoroughly.

DR. F. B. KREMER, MINNEAPOLIS, MINN.

No. 7. Patient, Mr. Shuey, student. Unable to get patient for the kind of operation he desired to show; so in order to fulfill his part put in a straight gold filling in an occlusal cavity in the left superior first molar, which was exceedingly well performed.

BY DR. F. H. MCINTOSH, BLOOMINGTON, ILL.

No. 8. Demonstrated the application of the Hatch clamp and the ivory matrix. No suitable patient could be secured to show the working of the S. S. White moss fiber gold as the doctor had intended and came prepared to do.

BY DR. GEO. S. MONSON, ST. PAUL.

No. 10. First superior *left bicuspid*, the cavity involving the mesial surface extending across the occlusal surface, and the whole of the distal surface, including the disto-buccal angle to the extent of one-fourth the buccal surface.

The margins were extended lingually and buccally to allow perfect cleansing of the same during masticating.

The cavity was filled with unannealed soft foil up to the step, the remainder of the cavity being filled with annealed soft foil. Completed operation; model filling; a credit to the operator's ability. Time consumed about an hour and three-quarters.

BY DR. WILLIAM W. SHRYOCK, FORT WAYNE, IND.

No. 11. Removable facing for crown and bridge work, and applying the countersunk nut in orthodontia.

This clinic was explained by steps. First. Selecting the facing. Second. Grinding the facing. Third. Burnishing pure gold, thirty-two gauge, to the facing. Fourth. Filling in the backing. Fifth. Countersinking the holes. Sixth. Cutting the threads on the pins. Seventh. Each step in making the gold nuts

with the Moseley lathe. And Eighth. The finished facing, making a beautiful piece of work, displaying much skill and complete thoroughness.

The countersunk nut was shown in a case of orthodontia where the left superior cuspid closed inside of the lower. The appliance was the original one, and very interesting, as it is the first time the countersunk nut has been brought before the profession in orthodontia.

BY DR. F. A. ROE, OF BURLINGTON, IOWA.

No. 12. A short and accurate way of making a gold crown.

Trim tooth perpendicularly so that measurement will slip off.

Make band longer than is necessary and fit same beneath gingival margin accurately.

If tooth is broken down remove band and place modeling compound upon the top of the tooth and allow patient to bite into it. Trim off the surplus perpendicular with the sides of the tooth and contour the top as you wish crown when done. Replace the band. Mix Teague's compound and press into top band and allow it to harden.

Remove band, being careful not to spring the band, thereby breaking the Teague's compound. The modeling compound placed on top of the tooth will remain in the band, which must now be removed. Pass the band into a hole punched in rubber dam, having the dam fit close to the edge of the festooned edge of the band. The band will now be suspended in the dam.

Place this over a Melotte's ring and pour with Melotte's metal. You will then have a complete metal model of the tooth, just the proper length. Now improve the form of the top of the metal tooth as you wish.

Cut the surplus length from top of band, slit it and draw it against the model. Now place a piece of cap material in place on tooth, and swage with a pine stick.

The crown will fit the gum perfectly and articulate perfectly without any grinding of any description.

This is very nice for making piers for bridges quick and accurate.

BY DR. J. W. SHEDD, PONTIAC, ILL.

No. 14. Patient, Geo. F. Knapp. Proximo-occlusal gold filling in superior right first molar with Pack's cylinders semi-cohesive

throughout, annealing after filling is well started, using Mason mallet. This was a very large filling and consumed a good bit of time, but made good, substantial filling for service.

BY DR. C. H. WEST, FARINA, ILL.

No. 16. Placed an amalgam filling with step retaining extension on the posterior proximal surface of first superior molar, using the Booth matrix holder. This is in the form of a clamp, having concave shaped wedges to conform to the contour of the teeth, which, upon application, separates the teeth slightly and at the same time holds the matrix so that the amalgam can be placed in a distal cavity as easily as a simple one. When the matrix is removed the filling will knuckle against the next tooth in a natural way. Two proximal cavities may be filled at the same sitting by placing two thin matrices between the teeth and applying the matrix holder between them. Can be had of Jas. T. Ingersoll, St. Paul, Minn.

BY DR. EUGENE R. WARNER, DENVER, COLO.

No. 18. This method of pressure anæsthesia and anæsthesia by absorption where exposure of the pulp exists, consists essentially of placing a small pledget of cotton or spunk with cocaine or eucaine crystals moistened with carbolic acid, alcohol, distilled water or other media upon the exposed part and cover with a small piece of unvulcanized rubber. Pressure is made with an amalgam plugger, burnisher or any other suitable instrument. Crowding upon the pulp will cause a slight response, but pain in a measure is a keynote to success, in that it indicates pressure, and that is necessary for quick absorption. Be sure and confine your solution so that absorption will take place. If anæsthesia is not complete in thirty to sixty seconds expose pulp more freely and reapply. This method works most happily on healthy pulps, but is applicable in all cases where complete or partial life is present in the pulp chamber or canal and quick action is desired.

BY DR. E. K. WAEDELSTAEDT, ST. PAUL, MINN.

No. 19. Patient, F. Garrett. Test with the gnatho dynamometer; 110 pounds on second bicuspid; cavity mesio-occlusal in left upper second bicuspid. Measurements of tooth: Length, 86; width, 56½; thickness, 91.

Cavity: Linguo-bucco-gingivally, 61; linguo bucco occlu-

sally, 58; width of step, 32; width of anchorage, 31½; length of step, 25; width of seat, 19; entire depth of cavity, 56; depth of step, 32; pulpal depth, mesio-disally, 24; depth below step, 24; depth of anchorage, 24.

Time of preparation of cavity, 36 minutes; time of inserting gold, 35 minutes; time of finishing filling, 30 minutes.

It took 43 pieces of gold to fill the cavity, and the weight of the gold was 24 grs.

Dr. Wedelstaedt was accompanied by his own personal office assistant, Miss Falk, who lent interest to the clinic by the facility with which she anticipated every want of the doctor throughout the operation.

The result of the clinic was a contour filling of dense structure, beautiful form and finish, and securely anchored in place. It was a masterly demonstration of the most modern methods of cavity preparation and gold insertion, and was only another example of the possibilities in tooth preservation of an operator who is thoroughly familiar with his subject and has the ability to carry out his highest ideals.

BY DR. CALVIN S. CASE, CHICAGO.

No. 20. Dr. Case showed cases in fracture, orthodontia and artificial palates, during process of correction, making a most instructive and practical clinic. One that must be seen to be fully appreciated. The doctor is doing a wonderful work in this line of practice.

BY DR. P. J. CIGRAND, CHICAGO.

No. 21. Patient. A method of filling root canals with sandarac varnish and gutta-percha points. The varnish can be easily worked into the pulp canals—much more so than chloro-percha. In contracting it sticks to the walls of the canals or periphery which is the opposite to chloro-percha. The gutta-percha points are not softened or dissolved when introduced in the canals as the varnish does not act on them. The pulp chamber is left in a favorable condition with view of canals not obstructed, varnish being transparent.

BY DR. T. L. GILMER, CHICAGO.

No. 23. Operated for the cure of facial neuralgia. Removing branches of the fifth nerve. Patient was removed to St. Luke's Hospital and was comfortable at the last report.

The patient we present to you this morning is seemingly in perfect health. He is robust, and has never had a severe illness. He is fifty-four years old. For nine months he has had paroxysms of pain, with increasing severity and frequency, on the right side of the face, principally located in the upper lip and nose. He says that the pain is so intense and frequent that life is rendered almost unbearable. The slightest touch on the lip, the act of speaking or eating, or a draught of air produces one of these paroxysms, and at times they come on when there is no apparent cause. He has at times been so disturbed at night that sleep was impossible, and narcotics have been resorted to in order to secure rest. All of the causes such as syphilis, malaria and other diseases which might be amenable to internal medication have been excluded, therefore nothing remains but reliance for relief, temporary at least, and permanent we hope, on surgical interference. In this case I am of the opinion that resection of the superior maxillary nerve offers the best hope for a permanent cure. The cause of the pain we have not discovered. It may be from pressure on the nerve in its canal in the infraorbital plate of the superior maxilla, caused by an outgrowth of bone from the canal wall, or from neuritis, or it may originate in the skull and find expression in the branches of the nerve exterior to the foramen rotundum. The patient has been intelligently treated by internal medication with no benefit other than temporary. The case is clearly *tic douloureux*, or neuralgia of the second division of the fifth pair of nerves. This nerve passes out from the skull through the foramen rotundum, thence downward and forward across the spheno-maxillary fissure into a canal in the infraorbital plate, and finds exit from the canal through the infraorbital foramen. A number of branches are given off from this nerve, the two principal branches being the posterior and anterior dental. The former is given off just at the entrance of the main nerve into the canal, the latter just before it emerges from the infraorbital foramen. The canal in the orbital plate curves markedly outward, forming nearly a quarter of a circle in its course.

Having seen how the nerve traverses the space between the foramen rotundum to the infraorbital foramen, we are able to speculate as to the best method for its resection. The simplest method which will most surely permit of the complete bodily removal of the nerve including its leash to a point near-

est the foramen rotundum, promises the best results. The stretching of nerves for the cure of neuralgia has often given relief, but the pain very soon returns. The tearing out of the nerve after securing it at the infraorbital foramen is a little more satisfactory, but as it is impossible, on account of the circular shape of the canal in the infraorbital plate, also on account of the large branch given off just inside the infraorbital foramen and another branch given off just as the nerve enters the canal, to remove more than the shortest piece of the nerve by evulsion, this operation is of but little more value than section or short exsection, at best; therefore, a better method is indicated.

The simplest and best method is to make a circular incision through the soft parts to the bone below the orbit so as to just pass the upper border of the foramen, which we will now do, of one and a quarter to one and a half inches in length. The periosteum, with the soft parts, are now lifted from the rim of the orbit and from the infraorbital plate back to the spheno-maxillary fissure, where the nerve will be exposed as it enters the canal in the orbital plate. The bone covering the canal being extremely thin, is easily cut away by the engine and bur. We make this cut nearly up to the rim of the orbit. We now seize the nerve by a blunt tenaculum and elevate it, and carry a ligature under it by an aneurism needle and tie it. This affords a means of traction on the nerve which is not nearly so liable to prematurely separate it as it held by the hæmostatic or other forceps. Traction is now made on the ligature and the nerve is drawn forward, when, with a pair of small curved scissors, I cut it off as far back as possible. During this part of the operation, and while raising the periosteum you noticed that I elevated and supported the eye with a small silver teaspoon. The concavity of the spoon just fits the eye, its general outlines being adapted to the shape of the orbit, and it also acts as a reflector. The nerve is now elevated just outside the infraorbital plate and secured by a ligature. Tension is made on this, and the leash is dissected out of the lip. The nerve may now be forcibly withdrawn. The anterior dental branch offers some resistance. It is probably large, but by cutting off the posterior portion and twisting the main nerve and making traction it comes away. We now pack the wound to staunch the hæmorrhage. The gauze is now renewed, the parts replaced, the wound sutured with horse hair and dressed without drainage. There will be no scar worth

consideration if we get primary union, which we expect. The advantages of this operation are, its ease, perfect vision of the operation from start to finish, and the certainty of removing a definite amount of the nerve trunk at the closest possible point to the foramen rotundum.

BY ROBERT GOOD, CHICAGO.

No. 24. Treat pyorrhœa alveolaris, "Younger method." Dr. Good showed two patients that had been treated. Case No. 1. Mr. G., whose teeth were discharging pus, and a number of them loose before being treated.

When seen at the clinic all teeth were firm, no pus discharging, and a good union between tooth and gum, except in one place which was under treatment.

Case No. 2. Dr. Mullin. The discharge of pus had been stopped on all the teeth and a union had been secured between gum and tooth with a number of them and new granulations were being thrown out around a number of others. Dr. Good removes thoroughly all deposits from the root and treats the old pyorrhœal pocket with an acid that is powerful enough to destroy any dead tissue that may exist and create a new fresh granulating surface.

BY DR. A. W. HARLAN, CHICAGO.

No. 25. Pyorrhœa alveolaris. Several cases were examined but only one was treated. The operation consisted of denuding the roots of foreign matter, cleaning the pockets with boro-glycerine water, ten per cent. This was followed by a ten per cent solution of trichloracetic acid in water. Such a solution coagulates and seals the pocket completely. Dr. Harlan explained his methods of treatment in detail to several groups of listeners, and emphasized the fact that a *sine qua non* for success in the treatment of loose teeth was to fix them immovably, cleanse the roots and sockets of foreign matter, disinfect the pockets, and coagulate them. After ten days the case is to be carefully examined to complete any imperfection in the first operation, and, if necessary, recoagulate the pockets or pouches.

The patient is to use massage of the gums and keep the mouth clean in any approved manner. Any complications are to be met as they arise, and if the patient is suffering from concomitant malaises they are to be treated systemically.

BY DR. J. E. HINKINS, CHICAGO.

No. 26. Dr. Hinkins' clinic, removal of deposits, showing the advantage of a new set of Dr. Case instruments.

BY DR. GARRETT NEWKIRK, CHICAGO.

No. 27. Management of children in the dental chair with special reference to the deciduous teeth.

BY DR. JOHN EGBERT NYMAN, CHICAGO.

No. 28. A porcelain bridge from start to finish. A suitable practical case not being obtainable, the doctor demonstrated the construction of a porcelain bridge detail by detail from start to finish, upon a model which he had specially prepared and which approached as nearly as possible the conditions met in a mouth. He had inserted two natural roots in about the position they would occupy were it a practical case. The roots used as abutments were banded after the usual manner, with twenty-eight gauge pure platinum. The lingual half of the root and band were trimmed as nearly horizontally flat as was possible without regard to the gum contour; while the buccal half was cut down accurately to the gum border. This was done to give the bridge a substantial seating and to facilitate the adaption and soldering of the cap to the band, it being a comparatively easy matter to adapt and solder the cap to the flat portion of the band. This was done. It was then placed upon the root again, and the cap burnished into contact with the buccal half with a large hand burnisher. This secures the accurate adaption of the cap in the most expeditious manner possible without any danger of springing the band out of shape. The material used for the cap was pure platinum, thirty-one gauge. The band was soldered with forty per cent platinum solder. The cap was soldered to the band with thirty per cent platinum solder. The lingual root canal of the molar was then enlarged to proper depth sufficiently to allow the insertion of a fourteen gauge iridio-platinum post, and the lingual root canal of the bicuspid was also enlarged sufficiently to insert a sixteen gauge iridio-platinum post. The two caps were then placed in position, openings drilled through them directly above the enlarged root canals, with direct cone burs of suitable size. The two posts were then tapered and forced through these openings up to their position in the root canal. Modeling compound was then

pressed around the caps and the posts, part of which protruded above the caps. The posts and caps were then removed from the roots, replaced in these small modeling compound impressions, and the inner part of the caps were filled with investing material, carrying it part way upon the posts. As soon as this was dry, the modeling compound was removed and the posts soldered to the caps with thirty per cent platinum solder. The caps were now replaced on the roots, an impression taken which extended from one cap across the intervening space to the other, and was not intended to include the adjacent natural teeth. After removing the impression, the caps were removed from it, the holes occupied by the posts filled with soft wax, and it was dusted freely with soapstone. A plaster model was then run from this impression, care being taken to remove the impression intact. This model was trimmed so that a die could be run from it of zinc or Babbitt's metal, in molding sand. A counterdie was then run with Melotte's metal. The saddle was now swaged up to this model; the gauge of metal used in the saddle was entirely dependent on the condition of the gum, to be determined by the judgment of the operator; thirty-one or thirty-two gauge if the gums are exceedingly hard and unyielding; from that varying to twenty-two gauge when the gums are very soft and spongy. The saddle was then swaged to about the width that the natural tooth would have occupied in the space bucco-lingually. It was cut out as narrow as possible in the same direction at what would be the interproximate spaces. This having been done, the saddle was turned upside down and placed on the original plaster impression; the wax was removed from the post holes, and the caps placed in position; the model was then run in this of investing material, composed of two parts plaster, two of fine shredded asbestos and one part fine powdered silex. Upon removing this from the impression, it was found that the saddle was accurately embedded in the model just the thickness of the metal used, the doctor claiming that this was the only method of accurately embedding a saddle to a uniform depth in the model, and consequently in the gum tissue; he claiming that it was beyond possibility to trim a plaster model by hand accurately to a uniform depth over any extended surface, owing to the varying density of the material. An iridio-platinum crossbeam made of fourteen gauge round wire rolled down to sixteen gauge and set on edge was then fitted in between the two posts, and was

bent so as to rest upon the saddle as closely as possible. The saddle was now soldered to the cap, and the crossbeam to the posts, caps and saddle with twenty per cent platinum solder. This completed the metallic structural foundation of the bridge. The piece was then again placed upon the original model, as it would be done in the mouth in a practical case, and the edges of the saddle burnished in at spots where the appearance of the gum might indicate that it could be fitted closer. A modeling compound bite impression was then taken; the inside of the caps were filled with wax so that the structure might be removed from the articulated models, which were then run up. Suitable facings of the proper color were then ground to position and waxed in place with merely enough wax to hold them and no more, the under side of the pins first being ground off to a flat section. The case was then invested, and as soon as the investment was set, the wax was removed from around the pins and crossbeams, picking it out with instruments, and dissolving out the film that remained on the metal with chloroform. The pins were then bent by the aid of suitable instruments into actual contact with the crossbeam. A minute quantity of borax in solution was painted at the joint of each pin and the crossbeams, and a very small piece of pure gold plate was laid at the same place. The use of the borax was not necessary, of course, as there was no danger of oxidation between these metals, but was done, first, because it pinned the pieces of gold firmly in place upon its being slightly heated, and, secondly because the gold in flowing would be more apt to confine itself to the area subjected to the borax. Pure gold was used as a solder to avoid the necessity of carrying the heat so high as to endanger the delicate yellow shades in the necks of the facings, there being no danger of the pins becoming unsoldered, as they were in actual contact with the bar. The case was then placed on the stove, and heat applied gradually. When full heat had been applied by means of the stove, the flame of the blowpipe was turned on, and the heat carried up until the gold fairly danced around the joints. The heat was reduced, the case cooled off in the same gradual manner. On removing it from the investment, all sharp corners in the metal structure were now rounded off.

Close's body finely ground was mixed with a fluid consisting of two parts distilled water and one part alcohol, to a pasty consistency, and applied to the bridge. The case was jarred consid

rably to bring the water in the mixture to the surface, where it vas dried off by means of napkins. The cusps were added and ulci carved to full contour, with a view to contouring the case as ompletely as possible at the first baking. This was done by neans of spatulas, excavators, and suitable sable brushes. The ase was thoroughly dried over an alcohol lamp before inserting in he electric furnace. It was necessary to fuse the case twice. pon removal from the furnace the second time it went to its lace on the model without any difficulty whatever. Articulation vas found to be as perfect as it was possible to get it, the doctor eing so fortunate in estimating the shrinkage that it was not neces- ary to even apply a sandpaper disk to the case.

BY DR. L. K. STEWART, CHICAGO.

No. 29. Patient, Dr. Chas. F. Bryant. Showing two gold eamless crowns on the lower second and third molars. Roots lled with chloro-percha and pulp chamber with Fellowship alloy. lso exhibited a method from beginning to finish of making seam- ss crowns. Dr. Stewart furnished some practical points in his linic.

BY DR. C. E. BENTLEY, CHICAGO.

No. 32. In absence of a patient was compelled to demonstrate on a skull. Every effort was made to secure a patient during the ree days.

BY DR. W. H. TAGGART, CHICAGO.

No. 34. A process for drying root canals. A copper wire, No. gauge, three and one-half inches long, is tapered so as to enter e root to the end, and the free end is brought out of the mouth d bent in any direction so as not to touch other parts of the oth, cheeks nor lips; and this free end is then heated by holding alcohol lamp or small gas flame in contact with it. This gives continually increasing heat and is perfectly under control. The inutest canals can be thoroughly desiccated, as the point is put to the canal while cold and the heat applied afterward. It is st to have different sized points, five or six, so as to have the nal full of metal, as this secures a more rapid conduction of heat the wall of the canal.

BY DR. B. J. CIGRAND, CHICAGO.

No. 35. Patient, Mr. J. Hynes, presenting a broken superior ght central, the other natural teeth being a case of arrested or

interrupted development. Dr. Cigrand set a Logan crown on the prepared root, and so ground down the surfaces of the Logan as to perfectly match the natural denture. The peculiar notched surfaces with sunken lines and irregular depressions were produced into the Logan by grinding down the artificial crown at points corresponding with the natural. Dr. Cigrand then demonstrated his method of setting an intradental band, setting the Logan with cement and gutta-percha or chloro-percha.

BY DR. E. H. ANGLE, ST. LOUIS, MO.

No. 38. Showed set of models for diagnosing orthodontia cases.

BY DR. J. Y. CUMMINS, METROPOLIS, ILL.

No. 41. Patient, W. E. Tennant, Fennimore, Wis. Gold filling in left superior central incisor, compound mesio-occlusal cavity.

The filling was made of Rowan's extra pliable decimal gold rolls, assorted.

BY DR. CHARLES C. CHITTENDEN, MADISON, WIS.

No. 42. Patient, Dr. A. H. Brown, of Belvidere; anterior proximal and crown compound cavity of left upper first bicuspid. Gold filling with matrix; proximal cavity filled two-thirds with Ney's soft foil, No. 3; balance of cavity completed with same gold annealed.

The cavity was thoroughly prepared, well inserted and beautifully finished.

BY DR. LEVETT E. CUSTER, DAYTON, OHIO.

No. 43. Patient. Demonstrated the construction of a porcelain crown whereby all the advantages of a band are obtained without any show of metal. A U shaped platinum collar encircles the lingual portion of the root, and this is soldered with Ames' solder to a thin cap of platinum which is then burnished down to the labial portion, the root which has previously received a shallow bevel. A Logan crown is then fitted to the completed platinum cap, and the two united with finely ground Close body.

BY DR. C. P. DORN, NAPERVILLE, ILL.

No. 45. Setting Logan crown with gold band. Dr. Dorn was unable to secure a patient, so demonstrated the method by model which is as follows:

Take wire measure and drive into fine rosewood ; cut wire and make band fit to wood model, and fit to root ; burnish band to collar of root ; cement band and crown.

BY DR. A. F. JAMES, OAK PARK, ILL.

No. 48. Immediate regulation. Dr. James' method did not impress your committee as one that many would follow.

BY DR. S. W. LAKIN, EUREKA, ILL.

No. 49. Patient, Mrs. Bates, Chicago. The restoration of the lower third of a superior left central incisor, using the screw system and Watts' crystal gold, packing gold with nonserrated instruments. This was a very large operation and had the appearance, when finished, of a substantial operation.

BY DR. EDMUND NOYES, CHICAGO.

No. 50. The restoration of mesial angle in left central incisor with platinized gold, for Dr. C. A. Kitchen, of Rockford. This operation was most thoroughly done, and it is the opinion of the committee that it will do service for many years and still be in good shape.

BY DR. G. D. SITHERWOOD, BLOOMINGTON, ILL.

No. 51. In no branch of the dental art has more mechanical skill been shown than in bridge work, yet one is shocked at the gold-crowned, gold-shod appliances daily exhibited in the front row of an otherwise beautiful denture. No one ever saw an artificial eye made of gold, nor yet a golden nose. On the contrary, every effort is put forth in restoring eyes, ears, noses or hair to copy nature as closely as possible. Yet teeth are constantly restored to their original contour with gold, gold, gold. The man who wants to induct you into the mysteries of the seamless gold crown is everywhere present. Gold is a beautiful metal easily worked and suitable in many ways for restoring the natural teeth when they are broken and decayed, but give it its proper place—*lingual surfaces only*. For the labial and buccal surfaces use porcelain, which will possess the merit of longer wear than gold, may be easily repaired, and have the beautiful color and polish of the natural teeth.

In the so-called all porcelain bridges—which in truth are platinum, iridium, gold and porcelain, platinum being used for the root bands and caps, and saddles, and platinum iridium for the pins

and cross bars and soldered with platinized gold, the porcelain being of either the low or high fusing body. Such a bridge many operators prefer to set with gutta-percha, so in case of breaking it may be easily removed for repair. In the bridge which I present for a clinic, the root of the right superior central incisor and the left superior cuspid are capped and used as the abutments for two dummies, viz., the left superior central and lateral incisors. No. 28 gauge platinum was used for the two bands or caps and No. 16, square platinum iridium wire for the root pins with the same kind of wire for the support bar. For the cuspid an ordinary plain tooth was soldered to the root wire and cap with a short piece of the same platinum-iridium wire projecting horizontally on the side next the lateral. For the two centrals and lateral the Mason backings and facings were used. The metal instead of being gold in these backings, however, is a white metal which Mr. Mason calls matinum.

It is hard and readily unites with 20 k. solder. You will notice there is a dovetailed groove in the backings, in which platinum backing or wire on the porcelain facing exactly fits. The backings are fastened in the groove with either gutta-percha or phosphate cement, the preference being given to gutta-percha. In case of accident a new backing may be procured and readily slipped in its place, as the platinum back piece and the groove are of the same size. For artistic appearance, permanency in use and adaptability in many ways, I have selected these backings for this clinic. I do not say they are the best, but they have proved the most satisfactory in my hands of all the methods I have tried up to this time. They may be used in case it is desirable to fasten an artificial lateral to a central. The central can be devitalized, a pin inserted in the root canal, to which one of the backings may be soldered, and when the central is backed up with gold, and all completed with the labial portion intact, suppose the porcelain back becomes fractured, a new front is readily procured and placed in position without removing the bridge. One principle that insures great strength of these backings is the stout platinum wire running longitudinally on the back of the porcelain. This short paper has been written as an earnest plea for more artistic skill in bridge work, and that our sense of the beautiful and useful shall not be constantly offended by the shining gold knobs in the faces we meet.

For preparing roots for crowning there is no remedy which

which I am acquainted that produces such satisfactory results as richloracetic acid. Where it is necessary to trim overhanging pieces of abnormal growths or where the gums overlap the roots apply the trichloracetic acid full strength with just enough water to dissolve the crystals; saturate a small pledget of cotton and apply to the portion of gum you wish to remove; use caution that only the portion directly around the root is touched. The acid will lessen the pain very materially and will stop the hæmorrhage and form an eschar that protects and hastens the healing of the gums. The escharotic property of the acid in many other cases is very great.

BY DR. I. C. ST. JOHN, MINNEAPOLIS.

No. 53. Patient, Dr. Baker. Restoration of mesio-incisal angle of left upper central, involving one-third of labial and lingual wall. Depending for incisal anchorage on an accessory dovetailed cavity in lingual wall in the incisal third. The cavo-surface angles of the incisal step were widely beveled in order to bind the labial and lingual walls well together with the condensed gold. Twenty-two grains of gold were required to restore the contour.

Dr. St. John labored under the serious disadvantage of being ill, yet he pluckily performed the operation and proved himself a skillful operator.

BY DR. T. W. BROPHY, CHICAGO.

No. 56. Patient, Michael Lewis, of Le Mars, Iowa, age forty; persistent facial neuralgia of both sides for period of fifteen years or more. Feeble-minded from birth. Vocal powers very much impaired. Speech practically nil. Pain the worst early in the morning. Operation consisted of vertical incision of an inch and a half over ramus of jaw through soft tissues to bone then by use of periosteotome the bone was laid bare in middle third of ramus to the sigmoid notch, and by use of burs in engine a groove was cut from the sigmoid notch downward three-fourths inch; through this opening a tenaculum inserted, and the nerve raised; then by traction on the nerve, the upper portion was severed a short distance from the Gasserian ganglion, then by traction from (patient etherized) above downward, the nerve trunk was severed about opposite the second molar tooth. Then from within the mouth an incision was made over the infraorbital foramen and

the nerve grasped and stretched. And the branches leading to the cheek were stretched and dissected out, then by traction upon main trunk it was severed at least an inch and a half back, on the floor of the orbit from its egress at the infraorbital foramen. Second case. Girl of nine years. Case of fibroma of right inferior maxilla reaching from (chloroform used) angle of jaw to central incisor.

BY DR. GEO. T. CARPENTER, CHICAGO.

No. 57. Method of reproducing gum tissue. Irritate the gum with metal band to stimulate granulations and protect the part with rubber hood so as to allow granulations to organize.

The metallic bands and rubber hoods are retained with silk ligatures and the parts are examined about once a week and stimulated with a solution of nitrate of silver 3i or 3ii to the ounce of water. With time and patience good results can be obtained.

BY. DR. J. AUSTIN DUNN, CHICAGO.

No. 58. How to make large compound amalgam fillings with perfect contour, contact and interdental space without previous separation.

Patient, Dr. F. S. Buckley, cavity; right lower first bicuspid disto-occlusal cavity.

The principal feature of this method is, after filling the cavity the hand matrix is removed and more amalgam added; the cavity is then packed flush and full over against the approximating tooth; as the amalgam hardens the teeth can be wedged more or less apart. At a subsequent sitting a thin saw is passed through and the finishing completed in the usual way, using a separator if necessary.

BY DR. D. M. GALLIE, CHICAGO.

No. 59. Patient, Mr. Schlosser, student in Chicago College of Dental Surgery.

Operation, compound proximal cavity, extending through to both distal and mesial cavities, large, pulp alive, filled with moss fiber crystal gold, finished, with twenty foil. Time of operation two hours and twenty minutes.

The finished operation was a beautiful piece of work and displayed the skill of the operator to perfection.

DR. H. J. GOSLEE, CHICAGO.

No. 60. Dr. Goslee demonstrated his method of carving usps for crown and bridge work.

DR. W. F. GREEN, EVANSTON, ILL.

No. 61. Patient, female, adult. This is a case where the our anterior superior teeth had been extracted for cosmetic rea-ons. For the past four and one-half years she has worn a orcelain faced gold bridge, sustained by a crown on left superior econd bicuspid and bands on the two cuspids. The left superior rst bicuspid and molar is missing. This is not an ideal case for e display of art, owing to the protruding superior maxilla, id the almost unlimited motion of the lower jaw.

A removable porcelain bridge was contemplated, but could t be used as the cuspids could not be paralleled, their axes cross-g each other almost like the letter X, so a stationary bridge was nstructed. The cuspids which were decapitated by the bands ere prepared, as also the second bicuspid, and platinum caps ith posts were fitted and a platinum saddle swaged to fit, tending from right cuspid to left superior second molar, setting er caps and pins. A piece of No. 16 iridio-platinum wire was bent fit, and resting on the three caps. This was attached in the esial line to the saddle. Facings were ground up and soldered wire, using ten per cent platinum solder throughout.

BY DR. H. ALFRED GUNTHER, CHICAGO.

No. 62. Patient. A secure and expeditious method of obtain-g anchorage or starting a filling by the use of crystalloid gold.

Six (6) models were presented, illustrating as many different ities and short and concise methods for obtaining anchorage in h case. Stress was laid on the fact to cut the gold into strips ficiently large so that when folded they would entirely cover the ttom of the cavity. As the gold *spreads laterally* wedging begins once.

It was not advocated to use this gold entirely throughout the ng, but only at the beginning of the operation, finishing with esive gold.

A comparatively easy and novel method was also presented taking a plaster cast of the hand in infancy, the model shown ng that of a girl thirteen (13) days old.

BY DR. J. E. KEEFE.

No. 63. Replanting for cure of pyorrhœa. Patient, Mrs. Robertson. The left upper central incisor was very loose. It had been under treatment for two months, but did not improve. The pulp was alive and the tooth set back of the arch. It was sore to the touch and very annoying. The tooth was extracted by Dr. Pagin and dropped into a saline solution of seven and one-half grains of salt into a quart of water. On examination some deposits were found near the end of the root. Absorption had begun at the apex. The deposits were removed, and the end of the root made smooth. The tooth was then drilled into and the pulp removed. The canal was filled with chloro-percha. The socket was then syringed out with the saline solution, and upon examination it was found that the process had all absorbed to the end of the root.

The tooth was then bathed in oil of cloves for a few minutes and put in the socket. A little pressure brought the tooth out in line with the other teeth. The rubber dam was then slipped over the teeth, and a previously made retaining appliance was cemented on the teeth to be left there four months.

All instruments used in this operation were sterilized.

Dr. Keefe also removed a retaining appliance from some teeth he replanted in January at a clinic given by the Chicago Dental Society. These teeth, which were very loose at the time of operation, were quite firm when bands were removed. The gums were healthy, and there has been no discharge.

BY DR. E. A. ROYCE, CHICAGO.

No. 64. Patient, Mr. John Press. Mesio-occlusal cavity first left superior molar; started cavity with Ney's absolutely noncohesive foil, No. 4, rolled into ropes then into cylinders; then partial filled cavity with Watts' crystal strips and Pack's cylinders, cohesive, with hand pressure; then finished with Globe beaten foil, No. 40, using Bonwill mechanical mallet, No. 2, modified by Dr. Royce. Time of putting in gold, thirty-six minutes. Part of the gold was put in with the mallet running at a speed of 5,000 blows a minute and finished at 10,000 blows a minute. It was very beautiful; the margins are perfect.

Dr. Royce shows the advantage of having the slip joint attached back instead of in front of the flexible cable, which is quite an advantage.

BY DR. G. A. THOMAS, CHICAGO.

No. 65. Continuous gum, upper, using rubber teeth, thirty-four gauge platinum. Baked body in Custer furnace thirty-five minutes. Finished baking case, enameling same in Peck electric furnace in twenty-six minutes. Case was placed in Custer before material was dry, while in the last baking enamel was quite dry. Material used, consolidated body enamel; plain rubber teeth; color of teeth retained.

BY J. W. WASSALL, CHICAGO.

No. 66. Patient. Pyorrhœa alveolaris of lower right central. Tooth loose; a flow of pus upon pressure over root, soft tissues tumefied. Considerable deposit of salivary calculus and signs of neglect in personal care of teeth pointed to local rather than constitutional origin in this case. The pocket deposits were removed with Dr. C. S. Case's pyorrhœa instruments, which in delicacy of form and general adaptability to the roots are most effective. Resorcin was used for disinfectant and lactic acid to promote union. The patient was carefully instructed as to future care of the parts.

BY DR. J. S. BRIDGES, CHICAGO.

No. 67. Patient. A bridge is shown, placed in position a year and a half, made with open face crown attachment. The method of procedure is as follows: A double compound cavity is prepared, an impression made in gutta-percha, a die run up from Melotte's metal. Gold foil is burnished upon this, removed and invested. Clasp gold is sweated upon this. After polishing the bridge is assembled in the usual manner.

BY DR. R. H. KIMBALL, CHICAGO.

No. 69. Patient, Dr. W. A. Johnston, Peoria, Ill. Large mesio-occlusal cavity first inferior right molar, immediate separation. Perry separator, foil, Ney's soft and cohesive foil.

The operation was thoroughly performed throughout, and made beautiful filling when finished.

BY DR. A. M. MARKLE, CHICAGO.

No. 70. Dr. Markle showed some very interesting models of regulating, showing skiagraphs for diagnosis. Four teeth were located in one position. Several other cases of X ray work.

BY DR. J. H. WOOLLEY, CHICAGO.

No. 71. Patient, Marian Orr, 478 S. Forty-third Avenue; fifteen years; good health.

Combination of oxyphosphate and noncohesive gold as a temporary filling. Object, noncohesive gold filled on cervical border protects the latter during the test of temporary filling from decay.

The following named were on the programme to give clinics but in some cases there were not suitable cases and in others the apparatus was not in good order. All of the undermentioned had good reasons for not giving a clinic:

Drs. Henry L. Whipple, of Quincy, Ill.; J. M. Sprinkle, Nokomis, Ill.; E. F. Hazell, Springfield; H. B. Farmer, E. St. Louis; K. B. Davis, Springfield; A. W. Chenowith, Atlanta; J. Campbell, Bloomington; J. E. Aigley, Farmington; Prof. Fuchs, J. N. Crouse, Chicago; J. C. Widenham, Jacksonville, R. G. Richter, Milwaukee, Wis.; R. M. Pearce, Rock Island; Grafton Munroe, Springfield; J. E. Cravens, Indianapolis, Ind.; and F. H. Berry, of Milwaukee, Wis.

The growth of interest in our annual clinics caused our society to decide on making clinics the special feature of the meeting in Chicago this year.

A list of seventy-one clinics was secured. A greater number than ever before attempted by our State society. Committee on clinics: L. W. Skidmore, Moline; F. B. Noyes, Chicago; E. P. Carpenter, Chicago.

The Dental Pulp.*

By A. J. Oakey, D. D. S., Chicago, Ill.

The object of an essay to be read before our society, it seems to me, is to introduce a subject all are interested in and one that will draw out discussion.

I never attend a dental meeting that I do not get some good point. I believe that to be a live dentist we must attend dental meetings. True, we can read most of the essays that are presented in our journals, but we lose the enthusiasm that is found where a number of men are assembled for the discussion of a given subject.

I need a revival frequently, and I am always inspired to better effort after a meeting with my professional brothers. We are apt to get into ruts and shortly become old fogies if we live too much alone professionally.

In order to draw out discussion I have selected for my subject one about which I have nothing new to offer, but one all have had considerable experience with and perhaps you have had some experience all others have not had, the telling of which will add to our general knowledge and make us better able to meet such a case successfully, when it comes to us.

THE DENTAL PULP.

"Good things are often put up in small packages." This is very true of the dental pulp in its relation to you and me, for what would become of the army of practicing dentists in our country and the multitudes that are being graduated from our dental colleges every year if there were no such monitor as the dental pulp? The teeth of the multitudes would "fold their tents like the Arabs, and as silently steal away," if the dental pulp were not at hand, warning of woeful time to come if encroachment near its territory be not immediately "stopped." This little pulp is a despot of despots and *will be obeyed*, or if neglected too long will insist on capital punishment for itself.

Bobbie Burns must have felt its power very strongly when he wrote his "Address to the Toothache."

My curse upon thy venom'd stang
That shoots my tortured gums alang,
And thro' my lugs gies mony a twang
Wi' gnawing vengeance.

*Read before the Hayden Dental Society, Englewood.

When fevers burn, or ague freezes,
Rheumatic gnaw, or colic squeezes,
Our neighbor's sympathy may ease us,
We pitying moan.
But thee, thou king o' a' diseases,
Aye mocks our groan.

Whare'er that place be priests ca' hell,
Whence a' the tones o' mis'ry yell,
And rankled plagues there numbers tell
In dreadfu' raw.
Thou toothache surely be'st the bell
Amang them a'!

"He jests at scars who never felt a wound," so you who have never felt the protest of an outraged pulp may think this "much ado about nothing."

This dental pulp, that inspired and caused to perspire the poet, consists of connective tissue well supplied with nerves and blood vessels; it occupies the central portion of the tooth crown and of the root or roots; the crown portion has horns corresponding to the cusps of the teeth. Bearing this fact in mind may save the chagrin of an accidental pulp exposure. At the periphery of the pulp are the odontoblastic cells, the function of which is the production of dentine. Thus we find in the case of continued irritation of the pulp, from the approach of caries or the thermal shocks conveyed through large metal fillings, nature attempts to protect the pulp and secondary dentine or pulp nodules are formed. These we frequently meet in those obscure cases of facial neuralgia, and in the cases of devitalization that give us so much trouble. Recently a case presented itself to me where a right superior central was so badly broken down that there was no hope of saving by filling, so a crown was decided upon. Patient had never had trouble from the tooth and did not remember whether it had been treated or not; cavities had penetrated so deeply that I felt it *must* have been treated at some time or it certainly would have given trouble. Upon drilling for post socket I found no gutta-percha or other root fillings, but about one-third of the way to the end of the root I found a live pulp. I cite this case to show the activity of the odontoblastic cells in their function of producing dentine. While often meeting pulp nodules and secondary dentine, I think I never met a case just like this one before. Again, as the teeth are worn down by mastication secondary dentine is formed to protect the

pulp. Frequently we find in cases where much masticating has been done on the front teeth that they are worn *down* to the gum and no pulp trouble.

When a case presents itself with the teeth apparently all sound, no discoloration, pain of a neuralgic character, not sore to pressure, look out for pulp nodules. This is a case of over activity of the odontoblastic cells. The secondary dentine or nodules are formed so fast that they encroach upon the pulp, setting up excruciating pain.

The fact that the nerves of the pulps are supplied from two branches of the trifacial or fifth pair of cranial nerves explains many of the so-called neuralgias and reflex pains. You remember the fifth is the largest of the cranial nerves and the great sensitive nerve of the head and face. The first branch supplying the eye-ball, the lachrymal gland, the mucous lining of the eye and nasal passage and the integument and muscles of the eyebrow, forehead and nose; the second, the superior dental, supplying the temple and side of forehead, skin on prominence of cheek, the posterior and anterior upper teeth, etc.; and the inferior, the largest of the three, distributes branches to the teeth and gums of the lower jaw, the integument of the temple and external ear, the lower part of the face and the lower lip. It is hard sometimes to convince a patient that he or she is mistaken in regard to the tooth that is causing trouble. Last week a case of this character presented itself. A lady having severe pain in the region of the infraorbital foramen, in the malar bone and in the ear, insisted that it must come from a cavity in the first upper bicuspid. Upon examination I found this small cavity and also a large cavity in the third molar. It was a favorable case for extraction, all the other teeth being intact; so gas was administered, the third molar extracted, and with it disappeared the trouble in the first bicuspid. Just a case of reflex pain, which is pain located at a point more or less remote from the seat of disturbance. The most common pulp trouble presented to us is hyperemia; this is but an unusual blood supply to the part caused by any irritation, such as caries, thermal changes through large fillings or any irritation of the dental fibrils; the pain is sharp and intense, usually not continuous; may be located in a particular tooth or some remote part. Comfort is secured by removing the cause of irritation and applying a carbolic acid or essential oil dressing. If

from caries I usually remove part of the decay, wash out with warm water, and apply 1, 2, 3, or oil of cassia. If comfort is secured, at the next sitting I fill, using a nonconductor between the pulp and the filling. If hyperemia be long continued the blood vessels lose their elasticity and an excess of blood remains in the pulp, leading to inflammation. Hyperemia may be induced by the careless use of disk and sandpaper in polishing fillings; a little vaseline on the disk or sandpaper will make the operation more pleasant for the patient and secure against the hyperemia from the heat of friction. To avoid irritation of the dental fibrils I usually use a chloro-percha dressing and cover with cement before inserting a metal filling. When hyperemia has resulted in inflammation of the pulp the pain is more apt to be continuous, dull and heavy, and more severe if the patient takes the recumbent position. They tell you the pain becomes worse after they retire. This inflammation may be reduced and the pulp become healthy again, but I have found in my own practice I get better results through devitalization. At the first sitting I make an exposure and relieve the blood pressure and apply an oil dressing. After the tooth becomes comfortable I apply arsenious acid and eucaine (B) crystals worked to a smooth paste with an essential oil and apply to exposed surface, cover with a thin asbestos cap to avoid any pressure and fill with cement. I find if I try to devitalize at the time the case is first presented the patient usually reports a hard pulp death.

There are other ways of killing the dental pulp than the intentional regulating appliances; immediate separation, a blow, etc., may produce this condition. Its connection to the main nerves and vessels makes it necessary to be very careful how this connection be disturbed. After inflammation comes the death of the pulp. It may remain in this condition for years and give no trouble, particularly in a sealed cavity. It may at once set up an irritation at the apical space and an abscess be formed. It is more safe I think, if you know the pulp is dead, to remove it; treat and fill pulp chamber at once. About the advisability of pulp capping I leave to be brought out in the discussion.

I believe you will now agree with my early statement that I had nothing new to present on the subject of the dental pulps. There is nothing new under the sun, but some things will bear many repetitions.

Dental Services in State Institutions.*

By Dr. J. W. Pucket, Geneva, Neb.

We have in this beautiful State of ours, twelve large State institutions: Industrial School for Girls, Geneva; Industrial School for Boys, at Kearney; Home of the Friendless, at Lincoln; Home for the Feeble Minded, at Beatrice; Industrial School, at Milford; Soldiers' and Sailors' Home, at Grand Island; Hospital for Insane, at Lincoln; Hospital for Insane, at Norfolk; Asylum for Chronic Insane, at Hastings; and the State Penitentiary, at Lincoln.

These institutions are all maintained by the State, and furnish a home for about 2,630 men, women and children, ranging all ages from birth to eighty-eight years. All of these people are clothed, fed and educated, also furnished with medicines and the services of competent physicians.

In the Industrial School for Girls, at Geneva, we have more than sixty inmates, all ages under twenty years. In the Industrial School for Boys, at Kearney, there are 160 inmates, all ages from six to twenty years. These two institutions are established to educate girls and boys in cases where their parents have failed. It is generally supposed that the girls and boys in these schools are trained, educated and reformed, so that when they are dismissed, they are fit associates for our brothers and sisters, sons and daughters. Is it right that they should have no training whatsoever in regard to the care of their teeth, except to neglect them until they become unbearable, then appeal to the physician for relief and he, in his effort to relieve them, is often compelled to sacrifice good teeth that should be saved? He often is liable to break a tooth, and not being specially prepared, is compelled to leave the broken off fang in the alveolus to be the seat of a chronic abscess. Finally, nine out of ten of these boys and girls, when dismissed, are crippled for life, simply because they did not have the care of a competent dentist at the proper time.

Then take a look in the Home for the Feeble Minded, at Beatrice; you will see 220 unfortunate beings, all ages from five to forty years. There you find the same condition: the physician in charge is compelled to do the best he can under the circumstances.

We next find in the Industrial Home, at Milford, sixty-one women and children; the women are from fifteen to twenty-five years of age; the children being born in the home. These girls have made a mistake; they have been deceived and left to bear the scoff

*Read before the Nebraska State Dental Society.

of a cold and cheerless world. Friends and relatives have forsaken them in their shame, and if there is ever a time when a woman is likely to need the care of a skillful dentist, it is when she is pregnant; but here we find the same condition—the mouth in care of the physician in charge.

In the Home of the Friendless, at Lincoln, we find thirty-five people all ages from five to seventy years. Their teeth are cared for in the same way, by the physician in charge.

In the Hospitals for the Insane at Norfolk and Lincoln, there are 612 people taken from all classes of society and all ages from sixteen to eighty-seven years; they are sent there often by friends and relatives, with the fond hope of a cure. Are these institutions properly equipped to treat all cases of insanity, epilepsy, etc., in every particular as it should be? I say no, they are not! Let me refer you to Dr. J. D. Patterson, of Kansas City, in the *Western Dental Journal*, of November, 1895. There he describes some cases, one especially, of epilepsy, beginning at the age of seven years. The anxious parents consulted many well read physicians and surgeons, but all were puzzled. It was called St. Vitus' dance, hysteria and epilepsy. Some of the various physicians and surgeons believed that stomach trouble was causing it; others that an old attack of diphtheria had left its mark; others that ocular difficulties existed; that the viscera was affected; that malaria was present; or that self-abuse was at the bottom of the trouble. Thus the medical men were baffled, and tried various treatments for three years. Still the attacks increased to the alarming number of sixty in twenty-four hours. When the boy came to Dr. Patterson to have his mouth cared for, the doctor used every precaution to remove all possible dental irritation. After six months, Dr. Patterson reports in the *Western Dental Journal*, of February, 1896, a complete cessation of the attacks. Also as described by Dr. Salter, of Great Britain, in the *Dental and Surgical Literature*, are many similar cases, and from Dr. Garretson, of Philadelphia; Dr. Hughes, of St. Louis; Dr. B. W. Richardson, London; Dr. Bryson Delavan, of Dublin; Dr. Brown Sequard, of Paris, and many others.

Dental irritation may induce pathological conditions in other parts of the body, or in the nervous structures, without the existence of pain to the patient. If there exists any possible der

al irritation in such diseases as epilepsy, chorea, headache, or nsanity, remove at once such suspected irritation.

Gentlemen, is it not reasonable to believe that we have atients in both of these hospitals that are suffering from dental rritation? In the Asylum for the Chronic Insane, at Hastings, hey have 654 inmates that the medical men in charge have pro- nounced incurable. Is it not reasonable to believe that some per ent of this vast number might have been benefited if the physi- ians had been assisted by competent dental service?

In the Institute for Blind, at Nebraska City, are seventy-five nmates, all ages, from eight to twenty-seven years. Also in the nstitute for Deaf, at Omaha, we find 175 inmates, from five to wenty-eight years of age. These two institutions choose to call hemselves schools. The object is to educate these unfortunate nes and make them self-supporting. They are homes for that urpose, maintained by the State. Each of these have a physician, vhy not a dentist?

Then in our Soldiers' and Sailors' Home, we find 285 inmates, rom fifty to eighty-eight years of age, who have spent the better art of their lives in the service of the government. Many of hem suffer from stomach trouble, indigestion, dyspepsia, bowel omplaint, etc. Can medical treatment alone cure these troubles ithout proper mastication? Any physician will tell you no. Then hy not avoid these troubles by having proper mastication?

Looking inside your State Prison, at Lancaster, we see 290 riminals, varying from sixteen to seventy-four years of age. They re sent there to be punished for crime. It is intended to be an stitution for training to prepare these people to again mingle with s, to enjoy this land of the free, and to earn an honest living. hey are taught to perform various kinds of work, trades, etc. Is right that while they are unwilling inmates here being reformed, at their teeth be so neglected that when they are dismissed any of them are handicapped for life, on account of this neglect?

Now, gentlemen, is it not a shame that the 2,630 inmates of ese institutions are being so neglected? Think of it, the State propriates each year about $25,000 which is paid for medical tention, but this State has never made any appropriation to fur- ish any of these institutions with the services of a dentist. And hy is it? Is it because the girls and boys in our industrial chools, and the poor unfortunate ones in the Home for the Friend-

less, the feeble minded, the insane man or woman, the epileptic, etc., and our poor, unfortunate, dishonored girls that are kindly taken in the home at Milford, our disabled soldiers and sailors, and last of all, our criminals in the State Prison, I say, gentlemen, is it because this vast number of inhabitants of our State is not subject to dental caries, or diseases of the mouth? Or is it because we, the dental profession, are asleep to the needs of our people? I believe it is the duty of this society to take immediate steps to bring this matter before the State legislators, and urge them to take the proper steps toward procuring an ample appropriation for the purpose of furnishing competent dental services in these institutions.

PROCEEDINGS OF SOCIETIES.

Chicago Dental Society.

A regular meeting was held in the Stewart Building, January 3, 1899, with the President, Dr. J. E. Hinkins, in the chair.

Dr. A. W. Harlan read a paper on "Poisons."

DISCUSSION.

Dr. Elgin MaWhinney: I do not know that you have a right to expect an apology from me for being unable to discuss this paper. Inasmuch as I was invited to open the discussion on it, it is only natural that I should have at least the privilege of reading it before discussing it. Not having had that privilege, I cannot discuss it intelligently before a scientific body of men.

The subject of poisons is one we are all interested in. In years past I have paid considerable attention to it, not exactly the phase which Dr. Harlan has presented, but other phases of the same subject. Inasmuch as we have to deal out those drugs which are poisonous in their nature daily, it is very essential that all of us should be familiar with their action and with their antidotes. Poisons act in three ways, namely, locally, remotely, or both at the same time. Of course, by the local action of poisons we all readily comprehend what is meant. It is an action such as is produced by corrosives or by the milder irritants. The mild irritants usually result in an inflammation, which, if carried to a great extent, results in the death of the tissues to which they are applied, and, consequently, act as poisons.

In looking up the definition of the term poison, I saw a good many things like Dr. Harlan did, and I shall take from my notes some thoughts which I have used on other occasions. The layman's definition of a poison is any substance which, when administered in small doses, caused disturbance of health or destruction of life. In a legal sense, it is any substance of a destructive or noxious character, whatsoever its nature or mode of operation, which, when taken into the system, will produce injurious or fatal effects. With the toxicologist the term means any substance of inherent deleterious character, either organic or inorganic, which, acting chemically on the tissues or fluids of the body, causes disturbance of function which affects health or destroys life. Of course, all of these definitions are narrow and limited, and none of them include mechanical poisoning, such as that produced by ground glass, poisoning by electricity, and poisoning resulting from bacteria and low forms of animal life—toxins. I was in hopes that Dr. Harlan would take up the matter of toxins because it is so important to all of us. I am in hopes that some time in the near future he will give us valuable information on toxins, and how to treat the various forms of septicemia resulting therefrom.

The remote action of poisoning is brought about through the medium of the circulation. There is no question but what poisons act locally and follow the track of the nerve tissue involved, but when their action is remote, it is carried through the medium of the circulation. As dentists, we are not as familiar as we ought to be with poisons that are taken by way of the stomach, and with poisons that are introduced into the circulation and act violently in other ways. Poisons also enter through the skin, the mucous membrane, especially the mucous membrane of the mouth, the nose, the eye, etc., as well as the lungs. It has been stated that medicines are absorbed more readily through the lining membrane of the lungs than any other membrane of the body. When these poisonous agents get into the circulation, they are carried throughout the entire system. They act directly on the organ that is most susceptible to their action. For example, certain agents will act more readily upon the liver than any other organ; certain other agents will act more readily on the spleen, heart or on the kidney. You are aware of the fact that poisons are influenced very largely by other things, by the peculiarity of the individual, etc. We know that one person will take an enormous dose of a given narcotic or

toxic agent without any effect ; another person will only take the slightest amount, and yet be poisoned, as Dr. Harlan has indicated by the case of aconite poisoning which he cited. I have seen remarkable cases of this kind, especially after the use of opiates, digitalis, cannabis indica, antipyretics, cocaine, etc. I have seen marked toxic effects from very small doses of these drugs.

It seems to me, it is very essential for us as dentists to know the antidotes of any of these poisons. When we encounter a case of poisoning we should be very calm and find out at once what organ is affected. For example, if the poison is some cardiac depressant, we should expect at first to find the heart failing. That being the case, we would resort to the use of some cardiac stimulant, such as nitroglycerin, brandy, aromatic spirits of ammonia by way of the stomach, brandy by hypodermic injection, etc. There is a great list of these agents which can be used to tone up the organ that is failing until such time as the poison is eliminated.

When a poison is taken into the stomach, if we know the specific antidote for it, we will give it. We will give an emetic, or use the stomach pump and get rid of it. Taking it is for granted that it is too late to do this effectively, our only hope then is to watch the failing organs, stimulate them, stimulate elimination either by way of perspiration or wearing it out by exercise, or by stimulating the kidneys, evacuation of the bowels, etc. Take the avenues by which poisons are most readily eliminated, and assist their elimination. If we will remember these things and have such agents at hand (and we need only a few to help us in emergency cases), we will know how to deal with our cases.

I do not feel that I can let the subject pass without emphasizing what Dr. Harlan has said regarding the liability to accident of this kind. As dentists, we are handling these drugs all the time, more or less, and we have no idea how readily a person may succumb to the effects of any of the poisons we use. To illustrate I had this remarkable experience some time ago in a case in which I used cocaine. It was a central incisor where I had made an application of arsenious acid to devitalize the pulp. It had been removed and a dressing of bicarbonate of soda had been introduced and left for three or four days. In removing it I found that a small fiber had been left in the apex of the root. The pulp had not separated at the apical space yet, and in attempting to separate it I found it exceedingly sensitive. I took a little cocaine (two p

cent solution) placed it on the cotton, and carried it up there on my probe, and at the end of about two minutes my patient had all the symptoms of cocaine poisoning. To be exact, I do not believe I used more than half a drop of a two per cent solution. When the patient recovered, he told me that he was susceptible to cocaine. He had been in such a condition two or three times previously from the slightest amount of the drug, taken by way of the nose on one occasion. He was an intelligent pharmacist, and understood these agents. He did not know that I had used cocaine until symptoms of poisoning came on. I was prepared to meet the emergency, and he came out all right.

Dr. A. H. Peck: So far as the essayist has considered the subject of poisons, he has certainly done it in that masterly fashion that he always does such things, and there is nothing left for me to add to, nor to find fault with. There is only one thought, and that is in connection with the new antidote for cocaine and eucaine poisoning—volasern. I have been trying to secure some of the substance, but as yet have failed. I think I am now in a position to secure some of it before a great while. What I wanted to say is this: I am informed by a reliable analytical chemist—an eastern man—who has examined and analyzed the preparation, that the active principle of the agent is nothing more nor less than the medicinal property of the calabar bean.

Dr. George W. Cook: I have done some experimental work with the combination of eucaine and cocaine, and before I did it I killed a few dogs, cats and rabbits, to find out, if possible, something about the toxicological effect of it, and I have found the combination is very good. In some respects it is better than either one used alone. Eucaine has a sedative effect on the heart's action, while cocaine stimulates the heart's action. In combination the one counteracts the other to some extent, so far as the heart's action is concerned. I used twenty milligrams each of eucaine and cocaine, and twenty c. c. of distilled water, and I always used distilled water or boiled it before using it, that is, I made it aseptic. The trouble we get from injections most of the time is from infection rather than from the drug itself.

Dr. J. E. Nyman: There seems to be a good deal of terror about the use of cocaine that has been engendered by experiences for which the operator himself was largely to blame. This afternoon, in the last issue of The Dental Review, I read an article

on cocaine in which the author stated that cocaine hydrochlorate, so commonly used, had a specific degenerative action upon the nerve, fibers and cells. At first glance the article seems very scientific. But when we stop to think what nerves are and how very difficult it is to study any physiological, chemical or anatomical change in the living nerve structure, we will readily see that such a positive statement is more or less theoretical. In order that I might not stand alone in my views, I called upon two noted neurologists and a physician who holds the chair of physiology in one of our largest colleges. They doubted very much the specific degenerative action of cocaine in local hypodermic use. They agreed that in cases of subacute systemic poisoning from chronic cocaine habit there might, and probably did, ensue a degenerative change in the nerve tissue itself. They doubted very much if there would be any change in the nerve centers in the immediate vicinity of an hypodermic injection. Now, I kept track of hypodermic injections of cocaine in over 300 cases, and I was struck with nothing remarkable beyond the hysteria in two cases, which I reproduced exactly in one case by simply pricking the patient with a hypodermic needle; in another case, simply injecting plain water. It was reflex hysteria due to the patient's own mental condition.

My method of using cocaine hypodermically is this: To begin with, I use an all-metal hypodermic syringe which can be made aseptic by boiling. I use Wyeth's cocaine tablets, No. 1, after the Schleich preparation, which contains one-fifth grain of cocaine hydrochlorate, one-sixth grain of common salt, one fortieth grain of sulphate of morphia. I make a fresh solution every time. I drop this tablet into a graduate which I use for nothing else than for cocaine preparations. To this I add one-sixtieth of a grain of sulphate strychnia, and to this I add twenty minims of clove water, making a one per cent solution. Clove water is the only water I know of that will keep definitely for any length of time without developing vegetable growths of some kind. Plain water may be distilled and redistilled, yet in a period of ten days vegetable growths can be noticed in it. I usually inject ten minims of this solution, which means the introduction of one-tenth of a grain of cocaine in the system at that time. Following the operation, after boiling my needles, I fold them up in cotton, saturated in alcohol and oil of cloves, equal parts. I get a fresh supply of clove water every week

n order to be on the safe side. Precaution will eliminate most of the dangers of cocaine.

Another point: Some gentlemen talk about injecting sterilized vater to obtain anesthesia by mechanical pressure on the per-pheral nerves. That is very nice theory to a certain extent, but did you ever stop to think that if you cut into that region or caused hemorrhage in any way, thereby relieving the mechanical pressure, ou would loose whatever anesthesia you may have had? That s my experience. I am not a cocaine fiend. If I could get the same results with distilled water that I can with cocaine solutions should certainly use it.

Dr. Cook tells me that a friend of his, a chemist of ability and n expert in physiology, has said that according to thorough nvestigations, cocaine produces no marked physiological effect in he system beyond stimulation of the pneumogastric nerve tract. We know that overstimulation means paralysis, and I expect that s the effect that ensues when cocaine proves fatal. The other ffects I think are simply due to hysterical mental conditions. If t were a fact that cocaine itself does have a specific degenerative ction on the nerve fibers and centers, I expect half of the popula-ion to-day would be going around without eyes, because we know hat oculists use it with perfect impunity in the eye, even up to a en per cent solution. They are constantly using it in four per ent solution on the Schneiderian membrane in the nose, a spot hich is more plentifully supplied with delicate peripheral erves than any other region of the body. It seems to me, if there ere a specific degenerative action caused by cocaine, we would ave a more definite proof of it.

Dr. TRUMAN W. BROPHY: If we think for a moment of the medies we use in the practice of dentistry, we will be impressed ith the fact that almost all of them are poisons. Those poisons e in our cabinets, and we use them daily. It is not to be ondered at, then, that mistakes sometimes occur, and it is very sential that every dentist should have at hand antidotes for the rious poisons that he uses daily. These antidotes should be so beled that there will be no chance for a mistake. If an accident ould occur in the use of a drug, he would have at his command agent that would enable him to counteract the effects of it. hile this thought has never occurred to me before, it seems to e it would be a good plan for every one of us to have these

remedies always at hand and convenient, so that we can proceed to work on a patient that has been poisoned at once, and not be obliged to wait any length of time for remedies. It certainly would be a simple thing to do, and for five dollars one can probably buy all the remedies he would need in small quantities for this purpose. I throw this out as a practical suggestion, so that you can make use of it in your everyday practice.

Dr. GEORGE B. PERRY: In view of the idiosyncrasies of the various patients that come to us, I would like to ask Dr. Harlan whether he considers it safe to recommend the dosage of any of the agents mentioned in our books for the different purposes. I hope he will be kind enough to give his ideas to the society also as to the comparative difference between cocaine and eucaine, what dose of eucaine he considers safe, and how to apply it.

A MEMBER: I would like to ask Dr. Harlan to explain to us the difference between eucaine A and eucaine B.

Dr. HARLAN (closing the discussion): I am very well aware that the subject of poisons embraces such a large field that it would be impossible to even give the symptoms of poisoning by a half dozen different remedies in a single paper. All of the recognizable symptoms can be obtained from works on toxicology, legal medicine, etc. I took sixty-five minims of wine of opium to see what effect it would have on me, and the result was it kept me awake the whole night. I never had any hallucination, any drowsiness or stupor, etc. Now, I venture to say that if one-half of the members in this room were to take thirty minims of black drop, they would go to sleep and remain in a profound sleep for twenty-four hours, or perhaps longer. In the same way I took a dose of cocaine hydrochlorate; I took more than one grain, and did not have any effect whatever. I only had a little numbness of my tongue and pharynx and lips. I did not become incoherent. I did not talk rapidly, etc., as I have heard patients talk. But I will say this: I did not take all the poisons that were mentioned in this list. I know just what the symptoms of poisoning by creosote are, and what they are by aconite, because I have felt them. But that is neither here nor there.

The toxalbumins, etc., according to the best knowledge I can obtain, are antidoted in two ways, either by the administration of small and repeated doses of tannic acid, or by the use of intern

antiseptics like betanaphthol, hydrochlorate of quinine, and agents of that class, frequently repeated.

With reference to the question asked by Dr. George B. Perry, it is on record that a person was fatally poisoned by simply touching the tongue to a cork that stopped a bottle with the tincture of aconite root (Fleming); so that the doses that are given in the books with reference to drugs are perhaps in a general way correct. But here and there there are such idiosyncrasies, as mentioned by Dr. MaWhinney, that would make it possible for an infinitesimal dose of a poison to destroy life. On the other hand, it is well known that with any agent which is taken on a full stomach, the chances of recovery are very great. As much as one ounce of bichloride of mercury has been taken internally, and the patient recovered without an antidote; so that you see the matter of drug poisons is one that, so far as dosage is concerned, cannot be stated accurately.

Many dentists are afraid they will produce poisoning by using small quantities of arsenic on the pulp of a tooth. The probabilities are that no dentist would ever give more than the twelfth of a grain of arsenic to poison a pulp, and usually it will be the sixtieth or eightieth of a grain. The smallest known dose of arsenic that ever killed anybody is a grain, consequently you see how little likely any one is to destroy life by using arsenic for the destruction of pulps of teeth. In this connection I would like to say that I consider it extremely hazardous and dangerous and unjustifiable to use arsenic for destroying the pulps of deciduous teeth. I do not destroy the pulps of deciduous teeth with arsenic in consequence of an accident that happened to me once where I introduced arsenic into the crown of a temporary deciduous molar, requesting the parent of the child to bring it back in about six hours. The child was not brought back for three days, and when the child did come back, the tissues around the tooth were so inflamed and irritated that I suspected there would be trouble. There was trouble. The result was the child never had a permanent cuspid, bicuspids, or first molar, because the germs of all those teeth were destroyed in consequence of the infiltration of arsenic destroying the crypts in which they were located, so that the child was minus its permanent teeth from the lateral incisor back to the second molar. I recognize in a great many mouths, where there is an absence of the second bicuspid tooth or first molar, the probability that some dentists

might introduce arsenic into a deciduous first or second molar and allow it to remain for twenty-four, forty-eight, or seventy-two hours, and later there would be necrosis, exfoliation and destruction of the tooth, and I explain to myself a great many of the cases of noneruption of those teeth from the fact that they were poisoned through a molar. I just wish to say, that if you gentlemen are in the habit of using arsenic for destroying pulps of deciduous teeth and cannot keep a patient in the office, you had better not do it.

I do not know very much about the relative safety of eucaine and cocaine, except that I consider eucaine much safer to use hypodermically than cocaine. I have used cocaine in such small doses that I almost feel ashamed to mention it. On the other hand, I have used such large doses that I feel sure it would not be safe to recommend them. We must consider the idiosyncrasies of patients. I reported last summer a case of poisoning by cocaine. At the outset, there was not more than four minims of a four per cent solution used, and I had the greatest trouble with the case for four or five hours to keep the patient alive. So I think probably a safe dose of cocaine is one-half to one and one and one-half or two per cent, at the outside, and the administration of a very small quantity, two or three minims. A fatal dose of cocaine is stated to be twenty-two grains, but the smallest known dose, so far as reported to have caused death, is one-third of a grain. So you see the discrepancy between twenty-two grains and one-third of a grain is so near the safe side, that you must use a small quantity.

Dr. NYMAN: Do you use it hypodermically or by the stomach?

Dr. HARLAN: Hypodermically.

As to the question in reference to eucaine B and Eucaine A. I should say from my own observation, not depending upon a written circular, that eucaine B is more powerful when injected than eucaine A. I make the solution in liquid vaseline by boiling and then if it is injected you do not have any trouble in the way of swelling or soreness. I have never had an abscess result when the solution has been prepared in this way. I believe we get a more certain and profound anesthesia with eucaine B than we do with eucaine A, and it is less irritating. I believe the books state that eucaine is about seven or eight times less poisonous than cocain but I am not certain about that.

INCIDENTS OF OFFICE PRACTICE.

Dr. F. EWING ROACH: I wish to report a peculiar case that

came under my observation a short time ago. The patient was a middle aged lady whose left central incisor was very loose. Upon examination I decided the tooth had been broken just below the gingival margin, but upon extracting it found the root was almost entirely absorbed, there being only about one-sixteenth of an inch remaining. This to me was a very unusual case of absorption of a permanent tooth.

Dr. C. J. MERRIMAN: I have four incisor teeth at my office that were extracted from a mouth some time ago. The patient is now wearing a full upper plate, and I kept these four teeth with the idea of presenting them to the members of the society for examination, and if they would like to see them, I can easily get them. I thought I had to deal with a small exostosis of the root between the central incisors, but afterward came to the conclusion that the condition was caused by the insertion of a large gold filling, which the patient told me took from nine in the morning until four in the afternoon to put in. This was done some years ago.

Dr. EDMUND NOYES: I had a few years ago a very distressing case which belongs in the same class as that first mentioned, though of a different type. It was a lateral incisor in the mouth of a young lady. When I first saw her there was a small absorption cavity just under the margin of the gum. Of course, it was covered by the gum when I first found it, but I supposed it was a carious cavity. It proved, unmistakably, to be an absorption cavity. I pushed back the gum, filled the cavity with gold and hoped that the absorption would be arrested. But a new absorption cavity formed above that one and I repeated the filling once or twice. In the end the root was completely absorbed, and also the outer alveolar plate almost to the apex of the root, so that the tooth finally was lost. The young lady is now wearing an implanted tooth; it is not so satisfactory as I could wish, because there was not, as you will readily understand, sufficient socket in which to implant it, and too large a portion of the root remains denuded.

Dr. GEORGE B. PERRY: I would like to ask Dr. C. N. Johnson to tell us his manner of preparing eucalyptol and gutta-percha in lieu of chloro-percha, and how he uses it. I would also like him to exhibit a tooth he showed me in his office this afternoon and give the society its history.

Dr. C. N. JOHNSON: I think every member of the society

knows how a solution of eucalyptol and gutta-percha is made for lubricating the canals of teeth instead of chloro-percha. When chloro-percha came out I used it extensively, but found it difficult to maintain a uniform consistency on account of evaporation of the chloroform, so that the solution would be variable. I felt, too, in certain instances, the danger of irritation from chloroform, particularly in cases where the membranes at the apices of the roots of teeth are exceedingly susceptible to irritation, whether mechanical or medicinal, and for that reason I thought if I could get a lubricant for the canal that was not an irritant, it would be advisable to do so. And so these two things induced me to use something else. While my bottle was partially filled with chloro-percha solution, I added to it eucalyptol, and as the chloroform evaporated I kept on adding eucalyptol until I obtained a solution that was of the proper consistency for ordinary use, and it remained so. It does not change. If ordinary base plate gutta-percha is used, the eucalyptol will not dissolve it readily, so that it must be previously dissolved with chloroform. In this way I have a uniform solution from one end of the year to the other. I lubricate the canals with this solution the same as I did when I used chloro-percha, following it with solid gutta-percha cones. I have less irritation of the membrane at the apical foramen since I employed this solution. It is nothing new. Many dentists use it. I have heard it advocated many times.

The history of the tooth Dr. Perry referred to is this and I wish I might have had it in my pocket when I heard a discussion several years ago on filling pulp canals with gutta-percha. The question was raised at that time as to the possibility of properly filling with gutta-percha, and this tooth is an indication of what can be done with it under difficult conditions. The tooth is a left lower second bicuspid which was decayed on the disto-buccal aspect, right at the gum, in a mouth where the tissues were rigid and not easily stretched. The pulp died. I treated the case, filled the root, and put it down in my record as a doubtful case, with the probabilities that the root would not be perfectly filled on account of difficulty of access. I did not feel justified in opening through to the occlusal surface, on account of the distance between the cavity and that surface, so I did the best I could from the bucca aspect. This tooth did not give any trouble for six years. Finally the patient came in one day with the tooth loose from pyorrhea—not from an abscess. I extracted it. I remembered the case from

my record, and was curious to know how successful I had been in filling the root. I filed the tooth down, and here it is (showing it). It will give you some indication of the possibility of filling root canals with gutta-percha under difficult conditions. The gutta-percha may be seen to have perfectly reached the extreme end of the canal.

Chicago Dental Society.

A regular meeting was held June 6, 1899, with the President, Dr. Garrett Newkirk, in the chair.

Dr. W. H. Taggart read a paper entitled "Porcelain Dental Art."

DISCUSSION.

Question: I would ask Dr. Taggart how he uses gutta-percha for setting the porcelain crown or bridge. Please describe the details.

Dr. W. H. Taggart: My experience is that pink gutta-percha is best for setting crowns and bridges because it is sluggish and tenacious. I first wipe out the band with oil of cajuput, then give it a puff with my breath to blow out the surplus so that the surface is evenly coated. The oil of cajuput is in such small quantity it does not saturate the gutta-percha, but makes it stick. I warm this crown over an alcohol or gas flame until it is warm enough to be uncomfortable in my fingers. At the same time I warm the pellet of gutta-percha and press it into the cap, getting approximately the right quantity, and while it is quite warm carry it to the mouth, not drying the root, but allowing all the moisture to be there. Then I press it home, being sure to keep up a steady pressure quite a length of time for the reason that gutta-percha is sluggish; it will flow out under gradual pressure, but we could not push it up like cement, not if we used a thousand times the pressure. After that is pushed up as far as you can get it pull it off; it comes off at that stage readily, because the root has been wet. Then with a hot flat burnisher I cut off all the surplus. If I do not find the band is near its seat I scoop out some of it; experience will help you out in that; then warm it again and carry it to the mouth. In scooping out or cutting off, always work with a hot instrument, so that it will cut like a hot knife through butter, and always work toward the band. Then try it in the mouth again,

and this time you will find that it will go almost to place. Sometimes I have to adjust a third time, but ordinarily I can get it in about two trials. After it is thoroughly in place and there is no exuding gutta-percha I dry the root with absolute alcohol.

I make the gutta-percha as warm as I can hold it in my fingers, drop oil of cajuput on it and carry it to the mouth. This process rids you of the nervous feeling you have with cement that it is going to get stiff and unyielding before you get it to the place, and you are quite sure there is no exudation under the saddle, which you cannot be in using cement.

QUESTION: How about the pin in the root?

Dr. TAGGART: The gutta-percha under this pressure forces itself toward the pin very nicely. I squeezed it around with my fingers, approximating the shape, but not making any special effort to get the right quantity in the first time, because you can get the right quantity in easier by forcing it up. The whole thing is moistened with cajuput, but that would not hold it to the surface if it was not that the gutta percha takes kindly to the surface.

QUESTION: How about coloring the body?

Dr. TAGGART: I have succeeded with Close's body in making twelve or fifteen colors. It means a whole lot of work. The porcelain I am using and advocate in crown and bridge work is Close's body. I believe it is the strongest and answers the purpose better than anything else on the market now. It is colored with mineral paint. I get colors at the art stores, such as they use in china painting. It requires a great deal of grinding and manipulation. I have the formula, which you are welcome to if you want to try it.

QUESTION: Can you get good results by mixing different bodies to obtain the right color?

Dr. TAGGART: I should think not. By mixing any other body with Close's, for instance, you would not get the strength you want in a body, especially if that body is a lower fusing one or not a strong one. Strength is the first requisite and color is secondary.

Dr. A. W. MCCANDLESS: All I know about porcelain art I learned from Dr. Taggart; his work has been of great benefit to me, as no doubt it has been to you. Although we have had many failures in porcelain work we have learned by these failures where the fault was and how to overcome it. I attribute many failures to the use of pure gold for soldering, because the Close body fuses

t a much higher temperature than is required to melt pure gold nd the result where pure gold was employed has been that the oints were weakened by the drinking up, so to speak, of this gold y the platinum. I now use twenty-five per cent platinum solder ltogether. Some advocate a greater percentage of platinum, but can see no necessity for it as the twenty-five per cent is not ffected by the heat required to fuse Close body, but I would not eel safe in using a lower percentage than the twenty-five. My ailures in this work have not discouraged me, because I feel that he cause being removed we now have something that is so nearly erfect we can consider that porcelain has come to stay. One oint Dr. Taggart did not speak of particularly. In fitting a saddle t is necessary to trim the plaster model considerably, especially f the tissues are quite soft, before the impression of the ridge is aken; especially is this true at the points nearest the abutments. To be sure the final fitting of the saddle must be done in situ. I would also emphasize that grinding the porcelain facings so that hey cover the labial side of the band makes it unnecessary to cut he root up as high as formerly. I see many of the porcelain facngs ground up in the old way, as for a porcelain faced Richmond crown, but this procedure does not make as nice an appearance, nd besides the gum does not present the healthy aspect that ou observe where no metal is left to show.

The round wire for bracing a bridge is certainly preferable to he four-sided for reasons stated in the paper. This cut shows he wrong way of adapting the bar, and this the correct way. The ar should be as far down as possible and close to the facings. This admits of a greater bulk of porcelain, which means greater trength.

A MEMBER: Will you explain at what stage of the operation ou adapt the bar?

Dr. MCCANDLESS: After making the saddle and fitting it I rind the teeth to place, wax, then remove the case from the nodel, invest for soldering, and as soon as the investment has ardened, the wax is boiled out, then the bar is fitted closely gainst the porcelain facings and in close proximity to the saddle.

I have been using gutta-percha for some time in setting rowns and bridges, and I think gutta-percha will add about fifeen years to my life, for now if any accident should happenso

that a crown or bridge should need to be removed, it is almost as easily done as the taking out of a plate.

To illustrate: A bridge with central, cuspid and wisdom tooth roots for attachments broke at the lateral; that bridge I was obliged to cut all to pieces, because it was set in cement. I made a new bridge entirely for this case, set it with gutta-percha, and in a short time this bridge was broken at the same identical point, but it was a very simple matter to remove and repair that bridge and replace with the gutta-percha.

Dr. Taggart speaks of this gutta-percha forming a cushion for the bridge. I think this is no doubt true and it makes it more comfortable for the patient. Gutta-percha holds fully as well as cement, and may be so thoroughly adapted that when you are ready for the final setting there is no surplus to squeeze out and rest under the saddle as must always be the case when cement is used.

Dr. G. A. THOMAS: I have listened to the paper of Dr. Taggart with profit and pleasure. There are one or two things I would like to have a little light thrown on. A great many dentists have a fad of putting a metal cap or crown over a live tooth and bringing it to the mechanical dentist, with perhaps a cap over the root, wanting porcelain bridge work made between the teeth. I have a great deal of difficulty in getting stability of attachment to a molar crown, more trouble than any other one point in porcelain bridge work, and I hope in his closing remarks Dr. Taggart will give some suggestion by which we may add materially to the strength at this point. I have tried, when these crowns have come to me, setting an extra piece of platinum around the outside wall of the crown by using platinum solder, and reinforcing the saddle in the same way by turning it up parallel with the side of the crown, but I find that often the point of weakness is right at the angle of attachment. I have tried drilling holes through the crown and running the bar through and soldering it inside the crown, but had a case not long ago where the bar seemed to pull out of the crown without any apparent cause whatever. These little things are what we have to contend with. There is one point I want to emphasize as much as I can, that is the horizontal base of the attachment for bridge work. We get so many caps in our work that come with the same idea a dentist will have when he is making a Richmond crown; he puts a porcelain facing in the tooth

here he is making an effort to hide the gold. That is not necesary. There is one class of work of this kind I have to contend ith that is hard to manage in an artistic way; that is where the oot seems to be out of line, especially where the platinum cap is n the root. It has always been difficult for me to get the contour f the teeth just as I would like to have it. We have a great many aps come to us something like this: Here is the labial and here ne lingual part; a dentist has an idea that by leaving this long he getting as much extra strength as he has length, while, in fact, porcelain work it is not so strong, even. You have a tooth tanding like that and the pins coming here and sticking out over ne cap and you have to grind them off and you get very little new orcelain here. The more porcelain you add with the facing the tronger the tooth will be. You get here a thin margin of tooth nd when you fasten this on with cement it will be very liable to hip off, being thin at that point.

I am very much pleased to get the ideas of Dr. Taggart with

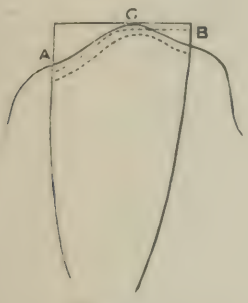


FIG. 1.

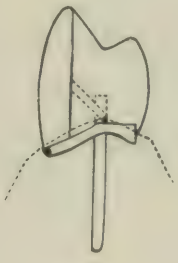


FIG. 2.

otted lines indicating gum margin, solid shaded portion small section of porcelain baked into V shaped space between facing and band.

gard to the reinforced bar, that point alone is worth the whole ening's paper in its practical results as to the horizontal base of ttachment of bridge work.

Dr. J. E. NYMAN: I think the attendance this very disagreebly warm evening is a tribute to the genius of the gentleman who as read the paper; it is something that all of us recognize, and ose of us who count ourselves among his particular friends, take ride in. Just a word of criticism in regard to the grinding of the oots and the subsequent grinding of the facings as the doctor uggests. I used to grind them in that manner, but do not do so y more. I will give my reasons why, and will say that I believe

my present method saves a great deal of time, and, as a rule, gives better artistic results. I have found that the thin section of facing resulting from the doctor's method of grinding and which extends up on to the band occasionally cracks off in fusing the mass of porcelain, and quite frequently bleaches out until it is several shades lighter than the adjacent portion of the facing.

I grind my roots in an opposite manner from Dr. Taggart as regards the labial and lingual surfaces. We will suppose, for instance, we have a bicuspid root in section, and that ACB of Fig. 1 represents the gum line. To begin with, I grind the root off as nearly horizontally flat as possible, leaving it about on a line with the gum margin at point C. It is left projecting above the gum at all other points for the time being, while the sides of the root are trimmed down to the proper shape. The root is now much easier to measure and fit a band to than it would be were it thinned down to the gum margin at every point before this had been done. After the preliminary fitting of the band is finished and it has been trimmed to correspond with the gum contour along the upper or lower edge, as the case may be, the root is then trimmed down a little farther, endeavoring to make the lingual section still horizontally flat, without any regard to the gingival line of the gum; while the buccal half is ground down as nearly to the gum line as it is possible to do without mutilating the gum. This buccal section is then trimmed down just below the gum margin with a sharp comparatively broad chisel, practically planing off the root, so to speak. After a little experience by operating with care, one would find that by this method he may trim a root down below the gum line without mutilating the tissue, and if it is done with extreme nicety of precision without causing any hemorrhage. See dotted line, Fig. 1. The band is then replaced upon the root, and the outline of the root traced on the inside of it by means of a sharp instrument properly curved. It is then slipped off and all the surplus cut away down to the line which was traced. It is now a comparatively easy matter to adjust and solder the cap to the horizontal flap portion of the band. The surplus is then cut away and slipped upon the root again, and the buccal half of the cap is burnished down into contact with the buccal half of the band. It is then removed and soldered, and the cap placed back upon the root for a final adjustment before fitting the post.

While the band plays some part in the retention of the crown, s purpose is:

1st. To prevent the splitting of the root, and

2d. To give us a joint which shall be removed from the action the fluids of the mouth.

The maintenance of the crown must be obtained—

1st. By the strength and size of the post.

2d. The shape that is given the root, and,

3d. The strength of the band.

The order of these three factors indicates their relative impor- nce in the retention of the crown.

If these directions have been carefully carried out the gum ould project slightly above the cap when it is in place. This ethod of fitting the cap to the crown eliminates all danger of retching or springing the band out of place. When the facing ground to fit this cap it is simply ground accurately into contact id allowed to extend the least bit beyond the border of the cap, y one thirty-second of an inch. After the main portion of the rder has been baked on the crown, the little V shaped space tween the buccal side of the facing and the buccal side of the nd is filled in with porcelain body, care being taken not to carry e heat quite as high as it was done for the main portion of the own, because these little sections do not require so much heat fuse them as the bulky masses do. By following this method u have a solid mass of porcelain throughout the facing which ll not change its color in any way. It is very much easier to ind into place, and I have had more artistic results than by e old method of grinding facings to overlap the band. (See g. 7.)

Dr. Taggart says in four years he has not made a gold crown. nen the doctor's practice runs quite differently from mine. I equently find second molars, inferior and superior, on the distal lf of which the bite is so close that I would not dare to put on a rcelain crown; and occasionally I am called upon to put on a own where the whole bite is so short that I would not dare put porcelain crown on even first bicuspids. These latter cases for- tnately are comparatively rare.

Dr. Brophy remarked to me that he was sorry such good fel- lws were putting on bridges with saddles, as they were bound to l failures, owing to the anatomical changes that would certainly

take place beneath them. Fortunately we have demonstrations to the contrary. Many of us have seen bridges of the open variety which have been on for years, the porcelain facings of which were embedded more or less deeply in the gum tissue, and no pathological condition was to be observed. The operator in constructing the bridge merely gouged out the model, fitted the facing in, and when the bridge was set simply jammed into the gum to the same extent. I think if we find such peaceful results after haphazard manipulation, we are quite justified in expecting as good results from careful, scientific methods of manipulation and adaptation. It is true that there may be some change in the alveolar process, natural and inevitable, with the course of years, but that saddle is resting upon a thick elastic layer of gum tissue, and even if the alveolar process beneath the saddle shrinks a little, the elasticity of the gum will more than compensate for it. The saddle does not in any way support the bridge, but is merely fitted tightly to the gum to keep débris of food from working in there, and to allow us to better restore the anatomical situation at the point where the teeth have been lost. Remember, I am speaking of a saddle properly constructed and properly adapted—I must confess, though, that most saddles are a sight to behold.

Dr. McCandless speaks of scraping and cutting away the model, but I defy any man to scrape a plaster model to uniform depth over any extent of surface. Plaster is not an homogeneous mass; there are hard spots and soft spots, and the force used in cutting through a hard spot would carry you deeper into the adjacent soft spot than you intended to go. I have frequently demonstrated a method of accurately embedding a saddle to a uniform depth in the gum. A description of it, however, would take up more time than I am warranted in consuming here. I fully appreciate what Dr. Taggart has said about fitting the saddle to the gum after having fitted it to the model. There are hard and soft spots in the gum tissue, and the saddle should be burnished in as closely as possible without disturbing the circulation. If we disturb the circulation most likely there will be atrophy of the parts as a result, or if there are any rough edges, hypertrophy with unhealthy granulations. As a rule, a safe method of procedure is to burnish the edge of the saddle into the gum until it is blanched at that point; then wait a few minutes and if the pink tint does not reappear at that time, you may know that you

ıave burnished it in too deep. If, however, after a period of say ive minutes the natural pink tint of the gum reappears, you may eel assured that everything is all right. Yes, saddles are all ight if they are properly fitted.

No one appreciates more than I do what the doctor has said ıbout failures. I do not believe that any new work that amounted o anything was ever attempted but that there were failures to be ecorded if the men who were attempting it were honest enough o report them; in fact, those of us who have had any experience now that the men who never have failures are the men who ıever do anything, or those who lie. I have had them enough to lisgust me with life in general and dentistry in particular, but as)r. Taggart says, looking them over calmly, after the first keen hock of disappointment had passed away, there were faults to be ound either of judgment or of construction to account for the ailures.

Dr. T. W. Brophy: There are certain anatomical features o be considered in the construction of bridges, which cannot be hanged. In the first place the alveolar processes are created for specific purpose, their function is to support the teeth; they do ot appear until the teeth are erupted and when the teeth are lost ature removes them. It is not within the function or power of ıan to change the processes of nature and nature invariably emoves the alveolar processes after the teeth are lost, as may be learly proven by the examination of skulls. And so it is always, his process goes on from the time the teeth are extracted until xtreme old age or the end of life. So then the skillful manipula-)r of porcelain work, or any other kind of bridge work, who makes se of the saddle, may have a very good result for a little while ut it will surely, as time goes on, result in failure, in the admis- ion of secretions or food beneath it, and it will by and by ecome a necessity to remove it and construct something else, ossibly another saddle set up a little higher, and so on until sad- le after saddle may be constructed until advanced age; and if ıey put saddles on often enough they will have them fit fairly ell. I venture to say that there never was a saddle made, and ever will be, that will last five years without admitting secretions ıd food beneath it making it necessary to remove it. I do not see ıe necessity of the saddle; it may feel a little more comfortable to ıe tongue for the time being, but surely it will result in failure.

Here is one, with a broad base; it will not last long, the gums will shrink, the bone will shrink, and it is not within our power to prevent this atrophy of the tissues. Dr. Nyman says it works very well. How long have they been used? I have seen them on a couple of years but it was necessary to take them off because they were uncleanly. It will, I believe, result in failure almost invariably in less than five years.

A MEMBER: I would ask the doctor to kindly give us a substitute.

Dr. BROPHY: Something that will allow of the free cleansing of the tissues, that can be kept clean and not allow secretions to get underneath.

Dr. J. N. CROUSE: The last patent taken out on bridge work that I know of is the new process of making a saddle bridge. It is what the Crown Co. expect to mulct the dentists with when the Protective Association peters out.

I believe with Dr. Brophy that the process of absorption will go on when you have plates and when you have not. Take plates of vulcanite or gold—I have in mind four or five where there is no bony process at all, simply cartilaginous tissue—and while you have more absorption with constant pressure, you have absorption just the same.

I wish to call attention to another extreme which I think should be avoided, and that is, cutting the tooth crowns down so low and setting up destruction there. In a number of cases I have been obliged to put on crowns without bands because the roots were cut so low that when a band is between there is no chance for gum tissue to grow, and I have therefore been obliged to put on the old-fashioned crown with pins in it. By the way, I removed one of these some months ago that I put on twenty-five years ago a crown on a central incisor, with a wooden pin, and it seemed to be as good as ever. So you can sometimes make crowns without so much band. The obstruction of the proper circulation of the tissue around the necks of the teeth should be avoided, and I think it is much better to have a little platinum show at the margin of the crown than that many patients should suffer from periostea inflammation.

Dr. BROPHY: I wish to state that I do not believe any one appreciates more keenly than I do the merits of porcelain work. I esteem a porcelain crown constructed in the manner described

by Dr. Taggart as the highest type of artificial crown, and I consider porcelain bridge work the most beautiful and finest of all bridge work, provided it be constructed without a saddle.

Dr. J. E. Nyman: If Dr. Taggart will pardon me, I will answer the remark of Dr. Crouse in regard to the fact that the bands of many crowns impinge upon the peridental membrane. One can easily determine whether that be so or not. If you have your band properly fitted to the root, there should be absolutely no pain in passing the cap to place. If it does cause pain it signifies that you have not trimmed your root properly, or that your band extends too far underneath the gum. If the cap passes to place without pain, you may be perfectly sure you are not impinging on the peridental membrane.

Dr. W. V-B. Ames: I did not expect to have anything to say on this subject, as I have taken no long chances on extensive porcelain bridges, but I am now in position to make a good beginning with the benefit of Dr. Taggart's experience. After Dr. Brophy's remarks, however, I cannot refrain from putting in a remonstrance. With all deference to Dr. Brophy's knowledge of the anatomy of the parts and his study of the physiological changes which may take place, I consider that his remarks are to be regretted, because his experience and observations do not qualify him to pass judgment, and he only tends to befog the discussion and the published transactions. I am convinced that Dr. Brophy is entirely wrong in his estimate of the value of the saddle in connection with the bridge. I do not care what happens to the bone and alveolar process if the soft tissues will remain in snug contact with the saddle, if the saddle is properly constructed, and that is the sort of result I am in the habit of seeing in connection with bridges of gold framework. I cannot imagine the dire results spoken of unless there has been insufficient support by abutments, with embedding of the saddle into the soft tissues on every closure of the jaws. If the saddle is a part of the bridge, which is immovably attached to good strong roots where there is none of this play and the teeth have been missing for a reasonable time, the tendency is for the soft tissues to grow to the saddle instead of shrinking away. If the soft tissues will behave in this way I will not be concerned about the behavior of the bony tissue beneath. Dr. Brophy has seen a lot of badly adapted saddles.

Dr. J. G. Reid: I would like to ask what the saddle is for.

One man states that it does not do any good in the way of affording assistance or strength to the bridge. The only object I see in a saddle is for the purpose of accumulating débris under it. If that is not the object of the saddle it is an absolute failure because débris will accumulate under it in spite of anything you can do. The tissues of themselves, under the saddle, are changed. Not only are the mucous follicles under the saddle so affected as to become a serious matter, but that food does accumulate under these saddles is a fact, and I could show by two or three that came from very successful hands, accumulations under there. I would like to compliment the paper all right, but I have not yet been able to find out what the saddle is for either from the gentleman reading the paper or the gentlemen who have discussed it.

Dr. E. M. S. FERNANDEZ: I must say that Dr. Taggart's paper deserves commendation. We certainly ought to be grateful to Dr. Taggart for what he has given us to-night. A saddle bridge if made properly is strong and durable work. Porcelain bridge work made to meet the gum by slanted body and sharp edges is weak and unclean.

I have good reasons to believe that the absorption of the alveolar process under rubber plates is hastened by the absence of changes of heat and cold. Porcelain is a conductor of heat therefore a porcelain saddle bridge I believe will retard alveolar waste.

Constant uneven pressure under a badly fitted denture will also hasten alveolar absorption. I have noticed that if a saddle bridge is fitted snug to the gum, the edge pressure is apt to make the gum grow over a little, making a good adaptation. I believe we are indebted to Dr. Carpenter for this theory.

In regard to the durability of such a bridge I feel that if dental bridge remains in first-class condition for five or six years and in a fair condition for two or three years longer, I think person ought to be satisfied and willing to undergo a little expense for future repair.

I judge that twenty-five per cent of the gold fillings made by reputable dentists go to ruin inside of five years. I do not mean to say that the workmanship is at fault, not at all. I mean to affirm that as a rule patients do not give their mouths proper care; therefore much of the dental bridge work goes to ruin on account of carelessness of the wearer of same.

In regard to lapping the tooth in front of the band, I think it is he strongest method if properly done.

Dr. W. F. Green: There is one point in connection with this saddle I would like to mention to those who have not the power to low twenty-five per cent platinum, and it is this: Allow your pin o extend above the cap a little further than Dr. Taggart recommends. Then swage your saddle to fit, punching a hole to engage in and soldering with pure gold if you cannot flow twenty-five, ifteen or even ten per cent platinum. The chances are the cap nd saddle will sweat together in baking your porcelain. With all due regard to Dr. Brophy I cannot fully agree with him as to the apidity of absorption under these saddles. I have sacrificed my wn and my wife's relatives, who were my first victims. I now ave a saddle bridge in the mouth of my brother, extending from eft superior molar to cuspid, that has been in nearly three years. examined it Sunday and I cannot see a particle of change of the rocess or gum tissue in that time. A short time ago I had the leasure of examining a saddle bridge put in by Dr. Taggart, where here evidently had been no change. The doctor knows how many ears it had been in.

Dr. Taggart: Six years.

Dr. Green: It fits snugly and was as sweet under the saddle s any one could wish for. I will defy any man no matter how ritical to find fault with that saddle or its fitting. Why has not bsorption taken place? Because the parts have been relieved from ll pressure, the capillary circulation has not been interfered with nd the heat has been radiated. I too have had my failures but ey were due to my not understanding the principles that underlie e construction of porcelain work. This bar must be set as low - you can have it and it is worth any one's trip here to-night to e Dr. Taggart's illustration of placing it.

Scraping models—better not do it. You are liable to get into ouble if you do. If you cannot adjust a saddle so it will fit accutely, coming in contact with the soft parts but not infringing ereon, better let the other fellow do it. I once scraped a model d got into trouble because I had too much pressure, consequently sorption requiring the removal of the bridge; and I have here a w one to put in its place with which I anticipate no further ouble.

Dr. G. W. Schwartz: I have not much to say, because the

paper speaks for itself. Dr. Brophy emphasized the strong point about saddles, and I agree with him to a certain extent. I have found that saddles made by the same method do not result the same in all mouths. That is, a saddle will work well in one mouth and may not in another. The reason is the difference in tempera ments, and I have found that I cannot always put in a saddle bridge with the same assurance in some mouths that I ca in others. Take a good hard gum for a saddle; but with soft spongy gums, susceptible to irritation, you are more liable to have trouble. I have seen trouble from saddles put in by the very best operators. What induced me to bring out a certain line of bridge work is the fact that in the interproximate spaces I had greatest trouble, while in some cases which I burnished the saddle down I had a hypertrophied growth, and in some mouths they have done splendidly. Dr. Nyman's method of adjusting a saddle is



Cut 2. Dotted lines show Closes body baked to facing and metal work.

the most accurate I know of. Dr. Taggart's system of burnishin the gum until it is white in some instances is excellent, in some have found hypertrophy. My method of making a saddle especially at these interproximate spaces, is to apply a little wa to the model to relieve the pressure. I make a bridge as strong a a saddle bridge but with the absence of the saddle. Let th (illustrating) represent a square wire I have to attach to the gun here is the square bar. I still use the square bar because I ca grind my joints and pins flat to get good contact for the solde and I afterward take the stone and round them all up. Now I s my facings on here. I made the mistake in some of my bridges getting the bar too high. I put my facing on here and build m porcelain out right to the gum, then I have a properly mad bridge. This is supposed to be the bridge going right throug Now I have the strength of the saddle, yet the absence of th

saddle. I was induced to make that because I have had trouble with saddles. When I do make a saddle I do it for esthetic effect and I make it as narrow as I can. If I were going to make that bridge I would use a metal molar crown, and this piece of porcelain from here to here would be stronger, because the shorter and thicker the piece of porcelain the greater the strength. We know that extensive bridge work is not as successful as crown work, because the bridge will break more easily from its length. I put on a piece of bridge work for Dr. Cross, and he said to-night it had done excellent service. I told him at the time it was made he would have to take it at his own risk and advised a clasp plate. Dr. Taggart and a number of others saw the bridge at the time, and they said they would give two years for the bridge to last, but it is over two years and it is still doing good service. It is on four bicuspids and two molars, and three of the abutments were very shaky. But I consider that an isolated case. I made a lower bridge in the same mouth that I considered excellent, but that failed, and I afterward took it out and made a clasp plate. I baked a crown with the attachment for one end of the plate in it and afterward fastened the clasp to the other end of the plate, and anchored it in that manner. As far as bridge work is concerned, four years ago I wrote an article on bridge work and advocated the clasp plate. You will find it, I think, in the REVIEW for May or June, 1895. I said extensive porcelain bridge work would not give the results we expected, and I find in my experience that what I said then is truer now. I do more clasp plate work than ever, but porcelain crown work I consider worthy of the position it now occupies, and bridge work, too, if used with caution, but I should confine myself to short bridges.

Dr. AMES: I should like to ask about the special bridge you describe. How about a short bite?

Dr. SCHWARTZ: If it were a very short bite I would not make a bridge at all. If it be a medium bite I would bring it down to that point, I would carry both bars here, and it would have to be a small, short bridge. I would not want a pump handle leverage on my porcelain; that would break it away. I think a root should be trimmed down to the gum margin. I trim down below the gum margin. I want the root trimmed so I can fit a band with the bevel on the buccal side, and I want to fit my porcelain on the outside of that band. My experience has taught me not to change that under

any circumstances. I do not want any band to show on the buccal because no matter how nice it may be fitted there will come a time when the platinum will show a blue line, and if you make it for esthetic purposes you destroy what you are trying to do.

Dr. TAGGART, in closing the discussion, said: I have been listening attentively to the arguments this evening, and I feel that they narrow themselves down as to whether this work has been done properly or not. I am not advocating porcelain saddle or crown work if it is not done properly, but the care, attention and detail necessary to do this work will give you equal results all along the line. I am not arguing in favor of this work if it is done in a slovenly and careless manner. I will admit that it will not stand the careless handling that gold will, but it will look just as well. Take, for instance, three-fourths of the gold bridges you see to-day, if it was porcelain work you would condemn it awfully and say what terrible looking stuff that porcelain is, but you will tolerate it in the old dirty bridge of gold, and not complain, because it is the best you know how to make. I am not setting myself up, or any of the porcelain workers, as being better workmen than others, but they have learned to give attention to detail. I do not believe you could find any one of these men without the heels are blacked as well as any other part of the shoe. You cannot do this porcelain work in a slovenly manner.

Dr. Brophy speaks of the pathological conditions that can take place, but he has no practical knowledge, he only theorizes that that process is going to change. He alludes to the fact that changes take place in the gum tissue whether they have teeth in or out. The conditions are so entirely different that you can make no comparison. When there are no artificial teeth in the mouth the pressure of eating on the gums will cause absorption, or the pressure of a plate will; but when you put a bridge there that will protect and keep it from pressure there is no pathological process under it. I am speaking of a bridge that is made in a proper manner and not in a slovenly one. I have a place in my mouth where I am going to have a saddle bridge made. I find there is lots of hard pressure comes onto that gum tissue from biting and getting chunks of food there larger than I get between the teeth. I find people who have comparatively few teeth scattered over the mouth and the pressure of food on these vacant spaces will cause a pressure that does not exist when you have a bridge and saddle there, the

gum tissue grows to it rather than away from it. I have seen bridges where I would trim the model away and force it up high in order to get the bridge in close contact. After cutting off the circulation I would get just the bad effects spoken of, but I do not think these conditions obtain when the bridge is properly constructed. If the principle is right the fact that they are improperly constructed is nothing against that principle.

In regard to Dr. Nyman's remarks, I will not take many exceptions to them because I have not time. He speaks of trimming the root several times. I want the root trimmed when I first start and I want to have my metal as near the width of the band as possible because you can fit a narrow band easier than one twice that width. I feel that possibly half the success in this line of work is because the teeth—molars and bicuspids—are ground down to the gum line that makes it possible to trim the root properly. The success comes in the fact that we can fit bands to these roots. Dr. Crouse speaks about his having such good results with a wooden pivot crown that had been on for twenty-five years. Why did you take it off?

Dr. CROUSE: Pyorrhea set in, so it was necessary to put in a plate.

Dr. TAGGART: Then the fact that that was a success was not from any fault of yours; it was not the fact that you did the work so well, or that the principle was correct, it was just one of those things that could not help but be right, and that kind of a crown would not save one root in ten thousand.

Dr. CROUSE: I simply alluded to it because I have seen hundreds of them with wooden pins and gutta-percha. It is a good way to make a crown body, and I would rather have it on a tooth where there is pyorrhea than to have a band on.

Dr. TAGGART: I have cured many cases of pyorrhea, bad ones, by putting a band around the neck of the tooth, letting it extend well up, cutting it first to the gum line, wherever that might be, cutting down to the gum line as though the gum were in proper place, and fitting the band well down under the margin of the gum, in order to change the conditions completely. If I lived in Chicago and was not healthy and would go to California, where the conditions are completely changed, I get well. If you fit that band snug around the root and extend it well under the gum, it will get well, because the conditions are changed, although

no amount of treating can make it well. So I do not see that the band is objectionable in pyorrheal conditions.

Nearly all these points have been answered by others. I made just one note in regard to what Dr. Reid spoke of. If the tissues change, why do they not show it? I can imagine that case when it came back was irritated and inflamed and the patient said there was a bad odor. But suppose the patient comes back and you look into the mouth and see a clean, healthy gum, and the patient says there is no odor, what would you think the condition under the gum would be? If there was anything under it, and it was bad enough to smell to heaven, I would say take it off; but as long as the patient does not know it, and I do not know it, what difference does it make? Dr. Reid wants to know why the saddle is there. We will take for granted that the points of cleanliness and irritation are removed and this leaves the extra strength and bulk you get in the porcelain. The saddle allows the necks of the teeth to be well defined and more true to nature, consequently, more agreeable to the tongue, and also allows a greater bulk of porcelain for strength. No one doubts that the porcelain in a saddle bridge would be a great many times stronger that the porcelain made in the form of so-called self-cleansing spaces. It is the strength of the bridge we are talking about now. The porcelain is weak from there to there, but it is strong here (illustrating). The extra strength the saddle gives to the dummy crown outweighs the disadvantage of the saddle. Dr. Green spoke about people not being able to fuse this high fusing solder, and letting the saddle part extend onto the cap and have a pin run through it. That gives an extra thickness there and you do not get any extra strength; your pure gold solder is a detriment instead of a help. All the strength you would get there would be where it touches the actual point, and the weak point would be that fact that this saddle bar runs over that in this direction, and that turns at that point and the platinum in the cap would still be there and twist it off at this point. So the necessity of extending it over there would add to the thickness of the cap, which is not necessary, and takes away that much thickness of porcelain.

A Member: Do you solder the ends of the teeth onto the back of the plate or framework with the platinum solder?

Dr. Taggart: Yes. In the use of any kind of a bar soldered to another surface, these being weak and not in a position where

ou can bring them into absolute contact by hammering, when you xtend the bar through from cap to cap and fit it carefully to the sad-lle, if you hold it up so you get the light through, the greatest amount of care in fitting would only give you pin points where one metal vould touch another. At the point of absolute contact, the gold older will answer all purposes, but you will not get any more trength than just that of the small points of actual contact, whereas in using the high fusing solder you get strength of the rame as though it was a solid piece of iridio-platinum. If two rregular pieces of metal are lying together and you fill between hem material that is away above the fusing point of porcelain, very particle of this solder adds strength and you will make those wo pieces ten times as strong. In reference to the flowing of the older, of course by expert blowpipe work, with the bellows just ight, and manipulating the flame just right you can fuse twenty-ve per cent platinum solder with the ordinary blowpipe. It is edious, and you will find that the solder seems to stand up. But y the use of the oxyhydrogen blowpipe it melts down as easily as ie ordinary eighteen carat would with the ordinary blowpipe. As) the cost, I do not think I have had a cylinder changed in four ionths and I have used it whenever I needed it. For the heavier ork I use the ordinary blowpipe, but for this high fusing solder I se the oxyhydrogen blowpipe, and it melts like ice.

A MEMBER: Tell them about heating gutta-percha with a ttle gas jet.

DR. TAGGART: That is a process that started a good many ars ago. You know Arthur E. Matteson is a genius in handling ings. He started in to make an alcohol flame, taking a piece of tton and dipping it in alcohol, getting an alcohol lamp to use in e mouth. When I got started to setting crowns with gutta-rcha I worked out a little process that has been very satisfactory cause it takes away the only thing that made me dread to set a idge in case it was porcelain. Whenever a bridge was put on operly you had to mutilate it to get it off to repair a facing. hen I learned how to manipulate the gutta-percha so as to take e bridge off in case of accident it took a load off my shoulders cause now if a bridge breaks I would not hesitate to make an pointment with the patient in the morning and setting the idge again before we went to lunch. With this minute gas flame would warm the bridge thoroughly until all the tissues and tooth

substance was warm. As long as the end of the pin holds the cold gutta-percha it will refuse to give, and I can think of no way to get the gutta-percha off except by continuous heat. If you try to do it with a piece of metal it cools off at one end before you get the other warm. Passing this flame along the bridge, protecting the cheek with a napkin or roll of cotton, you can in ten minutes time take off an extensive bridge, and a crown in five minutes.

Dr. McCandless: How about using gutta-percha to set a saddle bridge where you have two or three attachments?

Dr. Taggart: Ninety-nine per cent of saddle bridges have been set with cement. With the saddles I have taken off that were set with cement I never saw one but the cement would squash each way. I know of no way to get that out.

A Member: In the round bar do you use the same gauge regardless of the length of bite or extension of the bridge?

Dr. Taggart: I use for the bar a fourteen gauge, that is about as small or large as I care to use.

Here is a little scheme I have worked out. You know in using the low fusing material we pour it into a rubber ring, stretching the rubber ring around the plaster and pouring it into that. I have just taken sheet lead and formed it into a circle the same size as the outer diameter of the rubber ring. This sheet lead will take any form you have a mind to give it and will hold it unchanged. I have found a good deal of satisfaction in using Mellotte's metal for swaging these saddles and using modeling compound counter die. I have a metal ring filled with modeling compound and with the blowpipe I soften the surface just enough to embed my die as I want it. It makes a better counterdie than opposing metal against your die.

A Member: Dr. Taggart's scheme for the ring I think is a very good one. I also have a scheme I like very well, that is using asbestos paper. It is quite heavy, you can shape it to any impression, put a little rubber band around it, and the heat does not affect it at all, no matter what metal you use.

The Odontographic Society of Chicago.

Regular meeting, June 19, 1899. The President, Dr. H. J. Goslee, in the chair.

Dr. Edmund Noyes read a paper entitled "Professional Ethics."

DISCUSSION.

The discussion was opened by Dr. C. N. Johnson, who said: *Mr. President and Gentlemen:* I consider it quite an honor to be called upon to open the discussion on a paper of this kind. The essayist has looked upon the subject from a broad point of view, and I think this a commendable feature of the paper. We should study ethics and morals from the broadest possible basis. I was specially delighted in reading this paper to see that the essayist had gone to the foundation of ethics and morals as they relate to professional life. I sincerely hope the members of the society will study the paper thoroughly as it comes out in print from that point of view. I believe that as practitioners of dentistry we are inclined to look too narrowly on very many questions, particularly this one. The first half of the essay is worthy of presentation before any body of men or women, no matter whether professional or otherwise.

In regard to the attitude of one professional man toward the other, or of men generally, I often think that the man who continually criticises his fellowmen does more harm to himself than to the ones whom he criticises. If you will follow closely the career of a man who is always criticising his fellowmen, the man who is continually finding fault with his fellows, the man who sees the weak points in his brother and always magnifies them, you will find a man who will ultimately be a failure. The very fact of him criticising other men and casting reflections on their character disintegrates his own character. It cannot be avoided. The statement made by the essayist, that we are just as responsible and as much open to the law of morals as to the law of gravitation, is a natural fact, and if we study the history of those men—and we have them among us—who are prone to criticise their fellows rather than to praise them, we will find that they undermine themselves by so doing.

As to the different degree of responsibility in the professions and trades, I often wonder if the young men, in going into a pro-

fession like dentistry, ever stop to think for a moment of the moral responsibility they assume when they receive a diploma from the college and go out to practice upon the public. There is a moral responsibility belonging to a professional man that does not obtain in mercantile life—not that the man in mercantile life may be dishonest, but that there is a distinction to be made between professional life and mercantile life, so far as obligations are concerned.

The first duty of the professional man is to his patrons. His next duty is to his profession and the members of his profession. His next duty is to himself and his family. We do not always look at it in that light. We do not always follow those precepts. When we look at the question from the broadest point of view, those are the relations by which we should be guided. I have frequently spoken on the duties the professional man owes to his patients and the responsibility he owes, as well as loyalty, to his professional brethren, and possibly I have carried that loyalty somewhat too far on occasions. I had an instance occur in my office two or three months ago, and I gave an impression to another professional man that was possibly unfortunate. A physician sent a gentleman to me as a patient; I respected the physician because he was a friend of mine. When he sent the patient he said, "I have sent you a good patient." The gentleman came to me and I had a sitting with him. The physician came to my office weeks afterward and said, "How did you like Mr. So-and-so?" I replied, "He came on your recommendation; I therefore treated him like a gentleman, but I do not like him." He said, "What is the matter? He is an elegant fellow." I told him I did not like him on account of a remark he made about his previous dentist, and while I do not know who the dentist was, his harsh criticism of him repelled me. I told him in a few words what the gentleman had said, and he replied to me, "You seem to take it as a personal affront if anybody criticises another dentist." "Well," I said, "I presume that the practitioner who had done work for him was a reputable man, and he had no right to come to my office and berate another practitioner who served him to the best of his ability, even if his judgment did not agree with that of the practitioner." The impression I conveyed to the physician was that I went too far in defending the dental profession. Possibly that may be so in some instances.

We owe a first duty to the patient. At the same time I cannot

and in my office or in any other place and hear dentists criticised rongly by patients without resenting it.

It is too warm to talk much, but I just want to beg the privi-ge of the society to make a personal allusion. You know I am ne of those individuals who likes to pay a compliment to a man hile he is living, and not wait until he is under the ground. It curred to me when the subject was announced, and it also curred to me when I read the paper, and I have been more pressed since listening to it, that in the essayist of the evening have an example of a man who is in the highest degree ethical, d who always lives up to what he believes to be right. As an ample of true professional manhood I believe our essayist stands thout a peer in dentistry. (Applause.) I have known Dr. oyes ever since I came to Chicago, and my impressions of him ve always been that in his daily life he was the best illustration ad ever met of a typical professional gentleman.

Dr. GEORGE B. PERRY: The paper we have just listened to professional ethics is, to my mind, the best one I have ever ard, and I want to compliment Dr. Noyes very highly on the ne he has given to it and the thorough comprehension of the sub-t he has shown.

Dr. A. H. PECK: I take the cue from Dr. Johnson, that it is o hot to say much on any subject, but I will say this: I have joyed the subject matter as presented in the paper. It is, I think, e most comprehensive paper that I have ever listened to on pro-ssional ethics. As to discussing any particular feature of the per, I do not feel like doing so at this time.

Dr. L. S. TENNEY: I do not care to participate in the discus-n to any extent, but I hardly feel that I can let the opportunity ss without paying my respect to the gentleman's paper. I was ry greatly impressed with the general character of the essayist's marks and the broad moral ground upon which he bases his tements and conclusions. I am very glad indeed to have been esent and had the opportunity of listening to a paper coming m a gentleman whose long experience in the practice of den-try, and whose high professional attainments lend great weight d great influence to his opinions.

Dr. R. H. KIMBALL: When I received my card announcing e subject for the evening and saw the name of the essayist, I said myself that the committee had made an unusually good selec-

tion. We sometimes feel, perhaps, that a better man might have been chosen to present a given topic, but no such criticism can be made to-night, for there is in our society no better exponent of the principles laid down in this paper than the essayist himself. Therefore, I feel that much credit belongs to the committee for making such a wise selection and in chosing a topic of such vital importance and interest to professional men. I concur in what has been said concerning the hot weather which prevails this evening, yet I feel that I have been greatly benefited as an individual member of the society in listening to this able paper, and I think we must all feel that we have been large gainers in coming here to listen to it.

Dr. C. E. Bentley: I wish to thank the essayist for his excellent paper, and to say further that I believe that I was one of a few who suggested many years ago that a paper on ethics be read before the Odontographic Society every year, and every year since that time a paper on ethics has been read. I do not think it is overstating the proposition, when I say that the paper that has been delivered this evening—and I do not desire to draw any invidious comparisons relative to papers that have been read on similar subjects—excels anything in that line that it has been my pleasure to read or to listen to. I am thankful to the essayist for what he has given us. I should like to talk a little bit on the fundamental principles of ethics as they were enunciated in the first half of the paper, but it is too warm. I can only refer those of you who do not care to listen to such a discussion at this time to the work of Herbert Spencer which incorporates a good deal of the subject of which the essayist has spoken in a fundamental way in the first half of the paper. I think Dr. Noyes has firmly grasped all of the elementary or fundamental knowledge that enunciated in Herbert Spencer's "Justice," which exhaustively treats of the various phases of conduct and ethics.

Dr. J. G. Reid: I have heard a good many papers on both professional and moral ethics, and while they may not have had very much influence on my own career, at the same time there is occasionally a seed dropped which does a lot of good. It thrives and grows. There have been some things said in the paper that are well worthy of our consideration, and while I am not guilty of inducing Dr. Noyes to read a paper upon this subject—as when I retired from your committee the subject chosen was a different

e—but when he so kindly suggested changing the subject of s paper, the suggestion struck me as being so valuable that I vored it, knowing that the subject was in the hands of one who abundantly able to read an essay upon it. Dr. Noyes is one of e old practitioners of this city. Every young dentist is not long getting acquainted with him. It was but a short time after I me to this city that it was my good fortune to meet some of the st men in Chicago. Some of these men are not with us to-day; me of them are still with us, and to the influence of those ntlemen I attribute the methods of conduct of my business ore than anything else. I do not depend upon my own respon- bility; I look around and see how such men as Dr. Noyes have nducted a professional business, and none of you will deny that ey have conducted it successfully. I can look back to the time nen I commenced the practice of dentistry in this city, which is ry near a quarter of a century, and the moral influence of those en has been more than I am able to express to you in the nduct of my professional career in the city of Chicago. It is ceedingly pleasant for me to have heard Dr. Noyes read his per, because I have known him almost as long as any other man the city, and I want to add my testimony to what has been id by Dr. Johnson and others.

I desire to say a word or two with reference to the dental lleges and the conduct of their business. I am becoming more ong in my opinion as I grow older that the colleges are not bet- ing themselves very much, but rather degrading themselves by methods in which they started out in the early part of their ucational curriculum. I am fully satisfied that this society has dorsed a system which the colleges ought to assume them- ves. The very thing that this society started out to accomplish t year by the gratuitous distribution of professional work to the or by reputable men, I do not believe we have any right to . If there is any professional work to be done among the rthy poor of this city, the infirmaries ought to do it, and re is no excuse for their not doing it. The dental infirm- es to-day are not run entirely from that standpoint, and it will ly take a little investigation for any man to see it. There is t as much a desire on the part of the dental infirmaries to cumulate funds as there is for dentists to get money for their n pockets. I believe this, and I say it openly. There are

enough poor people in the city who need dental services for the infirmaries to do it without calling upon professional men to give an hour or two hours a month for that purpose. I would like to take a little wider scope of this subject on this line than the essayist has seen fit to do in his very unassuming way. However, with great earnestness he touched upon this phase of the subject, and it is a very serious thing to think about. It is not too hot for me to speak, and I hope others will participate in the discussion.

Dr. Ira B. Crissman: I have been very much interested in Dr. Noyes' paper, and I wish to compliment him on its excellence. He has presented the subject of professional ethics in a very able and clear manner. In the remarks I have to make I shall not attempt to cover the entire ground either of morality or ethics as applied to our profession. But Dr. Reid in his remarks touched on a subject which interests me very much, and if I should object to any of the points made in the paper, Dr. Noyes will excuse me. It is all right to compliment a man for having read an instructive paper unless one sees fit to oppose him.

With reference to the matter of college advertising, a point referred to by Dr. Reid, I think we can go a step farther than the infirmary. Men like Dr. Noyes are good, conscientious, moral industrious men; they are the class of men who can preach dental ethics and morality to a class of students. But our dental students do not always receive instruction with regard to professional ethics from such men as Dr. Noyes. A great many students may receive proper instruction in regard to professional ethics, yet when they go into the dental infirmary they do not practice morals and ethics in accordance with the instructions they have received. While they receive the fundamental or elementary principles of ethics in college, and are expected to carry them out in practice, they find it is impossible to do so. Now, I have been interested and connected with college work for some time in the past, and while I respect a great many of our college teachers, I must say that many of our dental infirmaries in this city are run for the express purpose of getting as much money as possible out of them. Some of my best friends are connected with dental colleges, and some of them expect to pay the running expenses of the college by running a dental infirmary. Is that ethical? Can you expect a student to be ethical when he commences to practice who receives his instruction on ethics from that standpoint? If you tell me that the de

infirmaries are doing work absolutely free or for the cost of the terial, I will say they are not doing it. Many of you know it. ey charge a fair price for the material, and some of us know at that price is. Many of our students graduate from dental leges after having ethics pumped into them, and the dental ools simply rob them of their daily bread. This is a fact. rsonally, I have a good practice; I have plenty of work to do; there are many young men in this city, who have recently duated, that need practice. A dental college cannot be run on nd; it takes money to make the wheels go round, and much of dental work done in our infirmaries should really be done by ing practitioners. There are many children in our public schools o need dental work, particularly the poorer classes. These ildren are not vagabonds, not paupers, but people who are pectable and need the services of dentists. If you can endow institution with sufficient money, or if the colleges can make ough out of the tuition fees of students, then they could run a e dental infirmary. The trouble is the colleges want to get rich fast. I must take issue with Dr. Reid that the worthy poor uld be sent to the dental colleges or infirmaries in order to have ir dental work done. I think there are many dentists who uld be glad to devote a certain amount of time toward the rthy poor free of charge, and I for one am willing to give them services from time to time free. The time has passed when we st stand on our dignity and allow the worthy poor to suffer. I sider it far from ethical when we think that we must convert rything we do into dollars and cents. We can make ourselves remely useful by doing all we can for the poor children of our blic schools.

Dr. W. F. Green: I would like to say a few words. I can- compliment the essayist in language that is fitting, therefore I ll pass the paper by. I wish to say something, however, in ard to dental infirmaries. Some of the dental infirmaries do k for absolutely nothing. I am not connected with any dental ege, and I am not receiving any pay for what I am about to A year ago last October I read a paper before the Home partment of the Woman's Club, of Evanston, on the anatomy and iene of the mouths of children. This paper was followed by a discussion, and the fact was developed that in the town of nston there were a great many parents who were too poor to

pay for dental services rendered to their children. The women o this club wanted to know if I could not do something for them a the dental infirmaries, the club paying the carfare of the childre to Chicago. I communicated with Dr. Menges, of the Northwester University Dental School, and he wrote me saying, "Send in ever scholar you have out there whose parents are unable to pay fo material used, and we will furnish it free; anything requiring gol we shall charge thirty-five cents a sheet." I communicated with th principal of each school, especially those on the west side of Evan ton, who reported to me. They investigated each child, and the famil surroundings, stating whether they could afford to pay anything o not. I examined the mouths of the children, and gave them a sli of paper to Dr. Menges. We sent in from seven to fifteen an sixteen in a bunch. Those children were deserving of free dent service, and this they received. I then communicated with D Brophy, of the Chicago College of Dental Surgery, and he said h would be glad to extend the same services at his college. I wro a letter to the superintendent of the Masonic Orphans' Asylum o the West Side, telling them of the fact, and advising them to sen any children there that were in need of dental services to the Ch cago College Infirmary. They informed me that they would glad do so. From what I have said, the colleges should not be cri cised too severely. This is a subject that must be handled intel gently. Students must have material to work on; we had to ha it when we were students, and I for one think we must proce slowly. We must not come here with spikes in our boots a jump on everything in sight. We cannot arrive at an intellig understanding of the subject by harsh and unjust criticism.

Dr. Frank N. Brown: I want to add just a word or two what has been said, and first to compliment the essayist on excellent paper. I consider it the best paper I ever heard alo the line of professional ethics. I will not take your time to d cuss it; I simply wish to take up the matter of dental infirmar for a minute or two. I did not gather from the remarks of Reid whether the infirmaries should furnish the material and the work free, or whether the infirmaries did the work and patients paid for the material. I could not fully understand wh he would have the college infirmary do.

With reference to the remarks of Dr. Crissman, I to lectures under him four or six years ago, and I remember very w

is instruction in regard to excavating teeth with the dental
ngine, and he went at it very much as he went at this subject, and
was about like this: Get a sharp bur and go at it. If the patient
inces, tell him to keep still, and go at it. If the patient does not
ep still, tell him to get up out of the chair and get out. I do
t know whether Dr. Crissman would have the dental infirmaries
work for nothing, or simply charge for the material that is used
a fair price, or do the work gratuitously. It is true, a dental
llege cannot be run on wind. Dr. Crissman admits that. I will
y this, that when Dr. Crissman says that there is no dental
firmary in Chicago that runs its infirmary on an ethical basis, I
im to differ with him. There is one college with which I am
miliar which does not advertise anything of what it does. It
nducts its work ethically, and I am here to prove it. The fact
the business is, that any woman who wears a silk sack or is
le to pay for work has no business in any dental infirmary. It is
place for such women. But how are you going to help it?
ese women are invited there. They come to have their work
ne through the influence of students and their acquaintances.

So far as the worthy poor of Chicago are concerned, there is
a dental infirmary but what will do work for any person who
not able to pay for it. Of course, we cannot build gold crowns
people who are so poor, or are absolutely poverty stricken.
ey do not expect that class of work, and yet there is not a den-
infirmary that will turn them away; there is not a private
ctitioner that will turn them away. If he does, he is not an
ical man. The reputable dental colleges of Chicago are trying
lo what is right. We are perfectly willing to run a school on a
timate basis; we have no desire to charge more than a
timate price for the material we use, and students frequently
te more material than they put in teeth. There is this to be
l: If we are going to educate men in dentistry we must have
erial for them to operate on or we cannot turn them out as
tists. If we do not have the material there, I would like to
w how we are going to get it.

What is the objection to educating our young men in dental
maries? If you raise the fees in the infirmary, it *does not en-*
age patients to leave their own dentist and come to the college
mary.

Dr. IRA B. CRISSMAN: I am willing to take off my hat and

sit down if I am making or have made a false accusation against any one, and if any dental infirmary in the city of Chicago is doing dental work absolutely free, it has changed its tactics. If Dr. Brown, Dr. Menges, Dr. Brophy, and others are doing work free, I am glad to know it.

As far as the margin of profit is concerned, in the infirmary, all I have got to say in regard to that is, that I am willing to help out in any work of this character. I have no spikes in my shoes, but I simply wanted to stir up the animals as to where we stand. I am not willing to jump on the colleges, but, gentlemen, I could cite instances where I know very well they do not do work for nothing and they do not do it for the absolute cost of the material. I am not hitting any particular institution; but I am not here to discuss that phase of the subject. If there is any college doing this work for nothing, I will help them out.

Dr. C. N. JOHNSON: There is no doubt but there have been a great many abuses in dental infirmary work in this and other cities, but I believe it is true that many men in practice in this city are not familiar with the present methods of dental infirmary work. When a gentleman makes the statement that some of our dental colleges are largely supported by the infirmary income, I must say that I do not believe that has ever been the case. I do not know of any college in which the infirmary is paying its actual expenses. What I want to do is to relieve Dr. Crissman's mind a little bit further and say to him, that to my knowledge, the infirmary of the college with which I am connected, the Chicago College of Dental Surgery, put in in one month five hundred gold fillings free of charge last winter. I believe all infirmaries are working toward that end. I know that the dental infirmaries have not always done their duty to the profession, but I believe that there is now an honest effort on the part of managers of infirmaries in this city to do what is best for the public.

Dr. ELGIN MAWHINNEY: I was delighted with the paper of Dr. Noyes, and I admire the force of his statements. With reference to professional ethics, I must say, however, that many of the things connected with our profession are easier for me to-day than they used to be. At one time it was extremely difficult for me, when a patient came to my office after having work done by another dentist who disregarded all scientific principles, to avoid letting the patient know that I thought so. I do not do this now

case in point: A gentleman came to my office highly recom-ended. He had had three or four teeth filled within six months, nd yet his teeth were in a dreadful condition. The operations iat were done were seemingly very crude, and he said to me that ie work he had previously had done was not right; it was not one well, and asked me whether I proposed to do it over again. said, "Yes, sir; it will be necessary to do so." "Well," he said, that fact alone would show that the work was not done right in ie first place, and it was only done six months ago." I asked iis gentleman a question or two, and found he was abundantly ole to pay for any work that I might do for him. I told him that ie fact that I sometimes made mistakes myself led me to think iat others might do so. I further reminded him that I did not now the circumstances under which his previous dental work as done. I said to him, "I am going to try and do a successful peration for you, and that is the best I can promise." That itisfied him. This is one of a hundred such cases that have ome under my observation since I have been practicing dentistry.

A short time ago one of my lady patients came to the office to ive some work done and her companion accompanied her. When had finished working on her teeth, her companion asked me if would object to looking at the teeth in her mouth, she stating at some of the teeth were giving her a little annoyance. I told r that I had no objection to looking at her teeth. When I amined her mouth I saw five of the most beautiful fillings I ever w in my life. I do not know the name of the dentist who inserted em. I said to her that the work in her mouth was beautiful, and e replied, "Do you think so?" I again said to her, "I should el proud if that had been my work." It was certainly splendid. ow, do you suppose that it hurts me in any way by commending e work of that dentist? Not at all. That lady left my office nvinced that a man knows good work when he sees it. She is satisfied that her dentist had done good work for her, and om that one remark on my part I understand that at least a dozen fferent families consulted that dentist through her influence.

A word or two about dental infirmaries. Some of us think the ntal infirmaries ought to have nothing but poor patients to work . If that is true, it is absolutely impossible to get them and to ucate dentists. When I went to school, I operated for my class-ates and their cousins in the city. I got acquainted with them

and their relatives and they were very much interested in me. They knew I needed practice to perfect my work and asked me if I would not work for them in college. Now, that thing is going on all the time. It is a commendable thing, for the reason the student is working for friends; he desires to do good work for them. It affords him means of instruction, and it is these things that are molding character and disciplining of students, which I think afford valuable instruction. I have noticed that when I went into the dental infirmary and saw a well dressed patient and inquired how the woman got there, I was informed that the patient came through the influence of Mr. So-and-so. May be it is the sister of one of the students, his mother, his aunt, his cousin, or some direct relative, and I do not see how we can prevent this. I do not believe the dental colleges should advertise to do things which they do not do. I believe there are some countries in which men in the lower walks of business life are punished for advertising to do things that they do not do. I believe the time will come in this country when business men will have to do that which they advertise to do or suffer the consequences. From a professional standpoint we cannot advertise in that sense at all. In the first place, it does not pay financially nor morally, and it jeopardizes our reputation. Consequently, from a business and social point of view, as well as from a moral and professional standpoint, it is a failure. So do not do it.

Dr. J. E. HINKINS: I am not going to discuss the subject of dental infirmaries. The part of the paper which appeals strongly to me is the moral aspect of the dental profession and the high standing which the essayist himself has always held in our profession. I graduated in the same class with Dr. Johnson about sixteen years ago, and while I have been located in the suburbs I have had a great many patients of the leading dentists drop into my office from time to time for treatment, and have been treated very kindly by some of them, and unkindly by others. But the point I wish to make is this: I have never heard any criticism from Dr. Noyes in any way, although I have heard the criticism of other dentists in the city. The point of the paper, as I have previously remarked, which appeals to me is the moral obligation of the dentist to the patient, also of the dentist to his fellow practitioner. I feel more than gratified in having heard this excellent paper to-night, and I wish to thank Dr. Noyes for it.

Dr. H. J. Goslee: I want to say a word or two in regard to e infirmary question. I wish to assure Dr. Crissman, Dr. Reid, d one or two others of the absolute fact that we wrote to all of e charitable institutions on the West Side in the city of Chicago ring the last winter, and extended them an invitation to send ery charity patient they had under their care to the Chicago Col- ge of Dental Surgery, where they could have all kinds of work ne absolutely free. I am not saying this in defense of the school infirmary question, but simply to enlighten those of you who ay not know that we are building up an infirmary clinic, one that ll be what we want, and what we hope to get.

Dr. J. G. Reid: The position which I assumed in my evious remarks was taken in all earnestness, and I am very glad know that there is a reformation taking place It is exceed- ly gratifying for me to know that the infirmaries are now en- ged in doing good, charitable work. If I have said anything it seems to have hurt the feelings of college men, I gracefully ask em to accept my apology, and to say that I had no intention of ing so. I said what I did because I believed it to be so, and sentiments have changed very materially within a few minutes, l if what has been said is true, I am glad to know it. I shall t make any such charges in the future.

There is one thing I want to say before I take my seat; I be- e it would be a grand thing for this society, and that is, to issue eprint or monograph of Dr. Noyes' paper and send it to every tist in the State. It is a paper that would be well worth their e to read, and I do not believe it would be an improper thing the society to issue the paper in the form I have mentioned, ting that the paper was presented by one of its own members. n order, I would like to make a motion to that effect. (Seconded l carried.)

Dr. Noyes (closing the discussion): I am very glad that the cussion has supplied one omission in the paper, and that is the erentiation between the moral obligations of professional men distinct from those of business or tradesmen, toward the poor. s rather an important omission. A professional man has a dif- ent, a far higher and more urgent obligation in the way of ritable work than the man who sells goods, or the man who nufactures goods, or, in fact, any kind of business man.

It seems to me that there is considerable misapprehension,

and perhaps a good deal of rather wild talk, about the question of college infirmaries. So far as I can see, the ethical and moral requirements usually under discussion relating to them are only two: First, that the announcements and advertisements of college clinics shall be made in proper manner and form, suitable and legitimate, in view of the circumstances and nature of the work they are doing. Second, these announcements and advertisements should be truthful and correspond exactly to their performance. There is no special moral or ethical reason why we should not stand up and demand that our colleges should do charitable work. There is doubtless the same obligation upon colleges to do work for charity that there is upon private practitioners in correspondence with their ability and opportunity; but intrinsically there is no moral requirement upon a dental college to work for nothing. Another matter in relation to this has been touched upon somewhat clearly, and it relates to the best welfare of students in our schools. The dental colleges may properly desire and undertake not merely to instruct students in the sciences and theories and mechanical processes pertaining to dentistry, but they may properly, so far as they can, do the same thing that a perceptor would do, teach them in every way that is practicable how to build up a practice for themselves, and the training in practice building, if I may use so uncouth a term, is a good deal dependent upon the classes of patients the students work for. Some of the colleges have complained that the absolutely poor people, people so poor that they can scarcely pay carfare to get to and from the infirmaries, and cannot pay for the gold that is put in their teeth, are not good patients with which to train students, for the reason they are apt to neglect appointments and simply stay away after they are relieved of pain, and the lower down we get in the scale of poverty the greater will be the difficulty of that sort. There is no good reason that can be urged why every one of the thousand dental students in Chicago should not do work in the infirmary for their sisters, cousins, friends and acquaintances, who desire them to work for them, and a large practice comes to the infirmaries in that way, and perhaps the most important part of the training that fits young men to get and retain practice afterward.

THE DENTAL REVIEW.

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ASSOCIATE EDITOR: A. E. MOREY, PH. B., D. D. S.

ALVEOLAR NECROSIS.

In nearly all cases where the pulp has been dead for a period of years and it has been left in the root undisturbed, gradually there will be found a progressive necrosis of the apical socket, which in middle life or later will give the possessor much trouble. We have had several marked cases within the past year or two where nothing in the way of treatment was useful except extraction and scraping of the socket to remove necrosed bone. In some cases by cutting down to the apex and burring the process and then using fifty per cent sulphuric acid we have saved the teeth, but this was at an expense of time and suffering which, in some cases, was a burden to operator and patient. The moral we draw from observing such cases is that it is perilous to leave dead pulps in roots of teeth or portions of them. If the roots are well filled and no animal matter is left within them the loss of such teeth is not a foregone conclusion. Fill the roots with something impervious to moisture.

APPRECIATION.

The July issue of the *Dental Digest* relies upon us for editorial pabulum, having published our editorial entitled "Gloomy" entire, with a few playful comments probably written by the office boy or a district messenger. We are ready at any time to discuss educational problems with the editor of the *Digest* if he will leave out of his rejoinder references to the Dental Protective Association, the Dental Supply Co., and other mercantile problems which so engross his attention that he is only able to see things through trade spectacles.

The National Association of Dental Faculties and The National Association of Dental Examiners.

The members of the dental profession will be glad to learn that the differences existing for some years between the National Association of Dental Faculties and the National Association of Dental Examiners have been reconciled. These differences have been the cause of much friction between the two bodies.

The cause of the trouble was the refusal of the colleges to accept, and the adherence of the latter body, to various rules, which have crystallized into what is known as rule 8 of its code and rules, sections 1 and 2.

The attempted enforcement of this rule recently led to litigation in the State of Wisconsin. The State Board of Dental Examiners of that State refused to admit to registration the diplomas of the Chicago College of Dental Surgery, the Northwestern University Dental School, the Pennsylvania College of Dental Surgery, the Ohio Medical University Dental Department, the Philadelphia Dental College and others, on the ground that they did not, in their preliminary examination come up to that standard established by rule 8 and demanded the graduates of these institutions presenting diplomas for registration should submit to examination by the board as to their qualifications to practice dentistry.

This contention of the board was resisted by a graduate of the Chicago College of Dental Surgery, who brought mandamus proceedings to compel the board to accept his diploma. The board moved to quash the proceedings, which motion was denied by the Court with leave to the board to file an answer. The answer was filed, and the case was in that condition at the time of the meeting of the two associations at Niagara Falls on the 28th of July, 1899.

With a view to the adjustment of the difficulty committees of conference were appointed by the two bodies, which, after going over the matters in dispute, agreed, on the side of the National Association of Dental Examiners to recommend that rule 8 be rescinded, that all colleges having membership in the National Association of Dental Faculties be placed upon the list of recognized schools and that all litigation be withdrawn, and on the side of the National Association of Dental Faculties that a new rule governing the preliminary requirements for admission to the college courses, should be adopted.

This action was ratified by the association. The Examiners Association adopted a new rule 8, sections 1 and 2 of which read as below, the remainder of the rule being substantially as before. Rule 8, new sections 1 and 2:

SECTION 1. Colleges desiring recommendation to the State board by the National Association of Dental Examiners shall make application for such recommendation through the committee on colleges, on blanks provided for that purpose. This rule to apply only to schools making application to the National Association of Dental Examiners for recommendation and such schools as may be dropped.

SEC. 2. The following preliminary examination shall be required of students seeking admission to colleges recommended by this association. The minimum preliminary educational requirements of colleges of this association for the session of 1900 and 1901 shall be a certificate of entrance into the second year of a high school or its equivalent, the preliminary examination to be placed in the hands of the State Superintendent of Public Instruction as adopted by the State board of Missouri.

The Faculties Association adopted the following rule governing the preliminary educational requirements of students:

The minimum preliminary educational requirement of colleges of this association for the session of 1900 and 1901 shall be a certificate of entrance into the second year of a high school, or its equivalent, the preliminary examination to be placed in the hands of the State Superintendent of Public Instruction.

Nothing in this rule shall be construed to interfere with colleges of this association that are able to maintain a higher standard of preliminary education.

The cause of friction being removed, the disputes which have arisen, there is every assurance will be speedily adjusted and the two bodies will thereafter work in harmony.

August 3. J. H. KENNERLY, *Secretary.*

DOMESTIC CORRESPONDENCE.

Letter From Niagara Falls.

Niagara Falls, August 6, 1899.

To the Editor of the Dental Review.

Dear Sir:—Niagara Falls, New York, was the scene of the second annual convention of the National Dental Association. The place with its natural marvels and good facilities for such gatherings always attracts enough for good attendance, but this year the ballroom of the International Hotel, though large, was too small to accommodate the crowd which at times even overflowed the anteroom.

It was estimated that six hundred dentists were in attendance, many of whom, possibly more than one-half, were not members of the National Association.

Headquarters was at the International Hotel. Meetings continued with three sessions daily from August 1 to the afternoon of August 4.

It was a great gathering of the clans from the North and the South and the East and the West, and from abroad. Many of the representative men of the profession were present. Among the older and a few of the more distinguished were: Dr. Corydon Palmer, Dr. S. B. Palmer, Dr. Burkhart, Dr. Holly Smith, Dr. A. W. Harlan, Dr. L. D. Shepard, Dr. W. C. Barrett, Dr. T. W. Brophy, Dr. C. E. Kells, Dr. N. S. Jenkins, Dr. S. Freeman, Dr. McKellops, Dr. G. V. Black, Dr. Wm. Jarvie, Dr. C. Sill, Dr. C. N. Johnson, Dr. Gaylord, Dr. E. A. Bogue, Dr. M. H. Cryer, Dr. J. Head, Dr. L. C. Bryan, Dr. Wm. Mitchell, Dr. James Trueman, Dr. G. H. Cushing, Dr. Thos. Fillebrown, Dr. W. W. Walker, Dr. W. V-B. Ames, Dr. James McManus, Dr. Ambler, Dr. Ottolengui, Dr. C. S. Butler, and the only—Dr. J. N. Crouse.

One of these gentlemen said never before had he attended such a representative body of the profession in convention—such men of recognized ability—and there was a profusion of papers as well by able writers, yet in their presentation they were in the main ordinary. Nothing startling developed, although surprises were expected. The programme of essays was as follows:

"Bacteriology" and "Plain Words with My Critics"—J. Leon Williams, London.

"Susceptibility and Immunity to Dental Caries"—G. V. Black, Chicago

"The Abuse of Crown and Bridge Work"—W. George Beers, Montreal.

"Porcelain Enamel Inlays"—Dr. N. S. Jenkins, Dresden.

"Orthodontia" (Illustrated)—Dr. Edward H. Angle, St. Louis.

"The Absolute Efficiency of the Controllers on the Market for Dental Cataphoresis"—Dr. W. A. Price, Cleveland.

"Dental Electricity"—Dr. L. E. Custer, Dayton.

"The Practical Side of It"—Dr. S. S. Stowell, Pittsfield.

"A Bastard Profession"—Dr. E. P. Beadles, Danville.

"Cements"—Dr. E. K. Wedelstaedt, Minneapolis.

"The Reflexes of the Three Lower Molars"—Dr. James Truman, Philadelphia.

"Gomphosis"—Dr. B. H. Catching, Atlanta.

"Prognathism. Extraction and Delay versus Expansion and Early Attention" (Illustrated)—Dr. R. Ottolengui, New York.

"Some Phases of the Cement Question"—Dr. W. V-B. Ames, Chicago.

"A Study of Harelip and Cleft Palate" (Illustrated)—Dr. Thomas Fillebrown, Boston.

"Dies and Counterdies"—Dr. Robert H. Nones, Philadelphia.

"Constitutional Deterioration the Cause of Dental Caries"—Dr. Harvey, Battle Creek.

"Oral Affections in Secondary Syphilis" (Illustrated)—Dr. W. C. Barrett, Buffalo.

"The Physiological Relation of the Adult Tooth Pulp to the Economy"—Dr. C. L. Hungerford, Kansas City.

"Etiology of Gnathic Abnormalities"—Dr. A. H. Thompson, Topeka.

"Some New Points in the Anatomy of the Face and Jaws" (Illustrated)—Dr. M. H. Cryer, Philadelphia.

"The Present Status of Continuous Gum"—D. D. Smith, Philadelphia.

"Impressions and Models"—C. D. Lukens, St. Louis.

"Literary Requirements of Dental Students"—Wm. Crenshaw, Atlanta.

"Dental Articulation and Occlusion"—Wm. Ernest Walker, Pass Christian, Miss.

"Some Phases of the Dental Educational Problem"—C. S. Butler, Buffalo.

"Care of Children's Teeth"—C. N. Johnson, Chicago.

"A Review of Operative Dentistry in One Man's Lifetime"—J. N. Crouse, Chicago.

"Choice of Filling Materials for the Teeth Between the Ages of Eight and Eighteen"—S. B. Palmer, Syracuse.

"Filling Superior Oral Teeth"—D. D. Smith, Philadelphia.

"The Text-Book and the Teacher"—W. Storer How, Philadelphia.

"Report of Therapeutic Progress"—J. S. Cassidy, Covington.

"Recent Advances in Therapeutics"—A. W. Harlan, Chicago.

"Counterirritation"—W. E. Griswold, Denver.

"The Radical Cure of Congenital Cleft Palate" (Illustrated by cases in practice)—T. W. Brophy, Chicago.

"The Pathology of the Pericemental Membrane"—M. L. Rhein, New York City.

"Roentgen Rays"—C. Edmund Kells, New Orleans.

"The Results that Follow the Extraction of Permanent Teeth"—E. A. Bogue, New York City.

"The Significance of Neuro-Dynamics in Oral Diseases"—G. V. I. Brown Milwaukee.

"Why Dentists Should Recommend the Use of Brush and Water"—Laurence Leonard, Waseca, Minn.

"Models and Appliances"—T. P. Hinman, Atlanta.

"Classification and Therapeutics of the Essential Oils"—A. H. Peck, Chicago.

"The True Function of Saliva"—L. M. Cowardin, Richmond.

"The Special Preliminary Education of the Operative Dentist"—R. H. Hofheinz, Rochester.

"The Uses and Limitation sof Formaldehyde in Dentistry"—F. W. Low, Buffalo.

"Clinical Proof that the Dentine Can Be Nourished After the Pulp Is Destroyed"—Joseph Head, Philadelphia."

"Porcelain Inlays"—B. C. Russell, Keene, N. H.

"The Mixter-Smith Method of Reducing Dislocation of the Lower Jaw"—M. C. Smith, Lynn, Mass.

"Gold versus Amalgam"—H. H. Johnson, Macon, Ga.

"Painless Dental Operations"—B. Holly Smith, Baltimore.

"The Hygiene of the Dental Office"—I. P. Wilson, Burlington, Iowa.

"Dental Hygiene as Applied to Public Schools"—E. F. Adair, Harmony Grove, Ga.

"Hygiene"—J. A. Chapple, Atlanta, Ga.

"A Criticism on Pyorrhea Alveolaris"—S. Freeman, New York.

The discussions of those papers that were read developed good oratory of a few and very little opposition. Only a few men were called upon ("repeaters" one might say) although it must be said that the president was liberal and would have granted the privilege to any one who stood the floor first but the volume of business made it necessary to curtail discussion. Especially did the president find this necessary the last few days even to allowance of only three minutes to each speaker.

It is safe to say that all left the Falls feeling that they had learned something and feel well repaid for the journey, the renewal of friendships and the acquirement of new, especially those from abroad whom we hope to meet next year on their native soil. As was intimated above, many papers were not presented; some were dropped "en section" the methods of which will be dwelt upon further on; some recommended by the sections for presentation could but be read by title (crowded out) others were withdrawn by the writers. In all about one-third of the papers found their way before the association assembled.

The "section" meetings were for the purpose of having read there, before presentation to the main body, all papers relating to subjects covered by the given sections; visé committees as might be called, that were to determine which were the most worthy of presentation at the regular session. Meeting of the sections took place Wednesday afternoon and a busy time it was for some, especially that on operative dentistry.

The meeting was called to order by the president, Dr. H. J. Burkhart, on Tuesday, August 1, at 11:30 A. M. The deliberations were preceded by prayers offered by a reverend gentleman from Niagara Falls. Vice-president from the south, Dr. B. Holly Smith, was called upon to preside while the president delivered the annual address, which contained the usual good recommendations, among which was a plea for the National Dental Museum, for the enlistment on the roll of the association's membership more of the seventy-five per cent of college professors and members of faculty boards who do not now hold membership. There was also a suggestion that the by-laws be amended, that the clause of D. D. S. (an absurdity) be stricken from them. That the qualifications for membership in the association should be broad and liberal. It should become the great popular organization of the country, and not as now, too much like a trust. The president seemed to anticipate the withdrawal of some of the essays and endeavored to intimidate the contributors by saying that after having presented their papers to the association they were the property of the association and could not be withdrawn.

In the address was a recommendation that ten minutes be allowed for the opening discussion of papers and each following speaker to be allowed five minutes. Later in the sessions, even this recommendation, which became a rule, was reduced by one-half.

The hope was expressed that some plan would be adopted for the raising of funds for the establishing of a bureau of "*original investigation*" and he spoke against the endorsement by so many professional men of the patent formulæ and preparations such as mouth washes, etc., as has been done and especially the kind where dentists are allowed stock in the company with promises of great returns.

These same proprietary preparation people have boasted of what

easy marks dentists were and how small they were as professional men (which is a fact).

Attention was also directed to the number of questions which are no nearer solution than a decade ago.

By way of remark: Is it not a pity that human nature is so perverse, even dental association presidents, that, instead of taking up the reins and continuing along the main road that to the retiring officer's vision seems to point to fuller success, they prefer to take the "other road" at the crossing and spend the time of their incumbency in formulating new recommendations to present to the body assembled, as they retire from office, having accomplished little else as a rule. It is more than probable that the new president will not fulfill the outgoing president's recommendations more fully than his predecessors.

The army and navy committee appointed a year ago was appealed to that they make an attempt to get some bill through at Washington appointing dentists on both staffs.

The doctor hoped for the unification of State laws relative to dental practice, and said there were three States ready to unify. The preliminary requirements should also be higher.

The president hoped that all discordant elements will be allayed, and referred to the loyalty of our dental pioneers who forty years ago founded the first dental organization, and are members still.

His address was referred to Drs. McManus, T. P. Hinman and Kaiser, a committee of three.

The American Dental Club, of London, through Dr. Mitchell, extended courtesies to this association, and the American Dental Society of Europe conveyed greetings and sympathy of promoting work, through Drs. Bryan and Mitchell, who were voted the courtesies of the floor.

Dr. Chas. McManus, as one of the committee on history, made quite a report of progress, recommending that the labors on the history be confined to American dental history, but there were some dissensions.

It seems that American history by American dentists might be made quite complete if coöperated soon by data collected from the older practitioners as well as through research, but general dental history compiled on this side the Atlantic by American dentists must have the coöperation of reputable men interested in the sub-

ject in the several countries of Europe and also of Asia and Africa. The books published on dental history were as follows: 1845, 1849, 1859, 1874, 1877, 1883, 1892, 1894, 1896, 1899, and one in 1876 in Great Britain.

The chairman of the committee, Dr. —— (?), spoke a great deal of what he has done for dental history, what he has been and what he is.

It was pointed out by Dr. Barrett that the committee on history must be wide awake as to what constitutes history, and what men receive as traditions and speak of as history. They must learn to ascertain what is history and winnow the rest.

One year ago at Omaha there was a vote of censure upon the New Jersey State Society for endorsing and lending its good name to the endorsement of a proprietary article. At this meeting Dr. Patterson offered a resolution emanating from the committee on credentials to the effect that the vote of censure upon the New Jersey State Society be rescinded, as that society has shown conclusively that their name was used unauthorizedly and that they were in no way to blame for the unfortunate affair.

The opening of Wednesday's evening session was by Dr. R. H. Hofheinz with a paper upon "The Special Preliminary Education of the Operative Dentist." He said in part that a man must develop some mechanical skill, or it will be a long while before he can accomplish good results in the mouth and possibly he will be a failure. There is absolute necessity for acquirement of manual training.

Dr. James Trueman eulogized Dr. Hofheinz's paper and emphasized the depreciating remarks in reference to the gold crown on front teeth.

Those who spoke in discussing the paper could find little or nothing to take exception to. Dr. Black endorsed the essayist's remarks. and commended that the paper be read and reread.

Another gentleman contended that a man should have office training before he entered college so as to prepare him for his labors or give him a chance to reject the work if he found he was not fitted.

Dr. C. N. Johnson thought the paper implied specialization of dental operations which he did not believe in. The student should be educated in the broadest possible manner. The educa-

tion of the student depends much upon the preceptor, but largely upon the student's ability.

Dr. Jack and Dr. Holly Smith said the principles of Dr. Hofheinz's paper were the best they had heard in a long time.

Wednesday morning Dr. Jenkins and Dr. Head read their papers on "Porcelain Inlays," the former describing his method of using the pure gold matrix burnished into cavity, and the use of the low fusing body; and the latter describing the use of very thin platinum for matrix, made as pliable as muffle heating can, and burnishing to cavity. Both reheat and reburnish if necessary. Dr. Head uses the high fusing body. In the afternoon both gentlemen demonstrated their methods by giving clinics.

Dr. Jenkins had a young man present for whom he has cemented in cavities in his teeth quite a number of inlays and fillings. In talking the subject over with several it seemed a question whether the low fusing body would stand the test of time, as the high fusing porcelain is conceded to do.

Dr. Wm. Ernest Walker read a paper this morning on "Dental Articulation and Occlusion."

Dr. T. W. Brophy's paper was one of the very able of those presented, the title of which was, "The Radical Cure of Congenital Cleft Palate," and, as was announced in the programme, illustrated by cases in practice.

It was understood that four congenital cases existed in one family and were operated upon. Two were present. One, a child about eight years of age, whose restoration of speech and oral function was remarkable. The other was an infant a few months old, who had been operated on the second week after birth. This case certainly demonstrated radical treatment.

Dr. Barrett opened the discussion of the subject eulogizing Dr. Brophy's work; he likened the accomplishments to the Scriptures "He touched the eyes of the blind and they saw." Dr. Brophy has restored the power of speech to these individuals who may never have been able to accomplish that otherwise.

Dr. Cryer spoke subsequently, taking exception to scriptural reference, by saying that he did not believe in miracles.

During the morning was presented Dr. J. N. Crouse's paper "A Review of Operative Dentistry in One Man's Lifetime," in which was a strong appeal for the more general use of soft gold.

The paper was somewhat of a historical character. It con

tained as fact that the first dental engine was made by a crank, Geo. F. Greene, of Kalamazoo, Mich., about 1866, and the first electric dental engine soon after, and was exhibited at the American Dental Association meeting in 1871, and again in 1899—this time by Dr. Crouse.

The practice of filing the teeth apart, the so-called "new departure" practice, was possibly the main résumé in the paper. Dr. Crouse says he still continues filing and chiseling the lingual surfaces of the six anterior teeth as soon as they give evidences of requiring care.

The "new departure" theory he considers as most harmful, and that the proof of their theories is still absolutely disproved.

Dr. Miller's important discovery of the cause of dental caries was referred to.

Stress was laid upon the qualifications of amalgams, and a description of those required in the perfect amalgam was given.

Dr. S. B. Palmer opened discussion of the paper and said he believed there were two causes for dental caries; one external by the action of lactic acid as described by Miller, the other electrical by thermal changes, which seems to be the ground work of the doctor's metaphysical theories.

Dr. Black says that to have success in filling operations one must use *soft* gold or *cohesive* gold *exclusively*. The use of crystal or sponge gold is a great mistake because the physical properties of the material are against the proper union of the molecules, but that he does not wonder there is a disposition to try it; it seems to work so easily—like putty, etc.

The historical value of Dr. Crouse's paper appealed to Dr. Crawford, and he spoke quite laudatory thereof.

Sincerely yours,

"THE BOROUGHS."

[To be continued.]

LETTER FROM NEW YORK.

NEW YORK, August 6, 1899.

TO THE EDITOR OF THE DENTAL REVIEW.

Dear Sir:—The last of the dental society meetings in and around New York for this summer was a little informal dinner given by the Institute of Stomatology to Dr. L. C. Bryan, of Basle, Swit-

zerland. It was strictly *informal*, was given at the Hotel Marl borough Thirty-sixth Street and Broadway, Monday evening, Jul 24, and was very enjoyable.

The president, Dr. E. A. Bogue, presided, with Dr. Bryan or his right hand and Dr. Jenkins, of Dresden, Germany, on his left Among those present we noted particularly Dr. James Truman Dr. Eugene Smith, of Harvard, and Dr. Howard Stewart, o Mississippi.

Dr. Bryan being called on paid tribute to Dr. Jenkins by ask ing that he speak first. Dr. Jenkins referred to the great respon sibility of being an American dentist in Europe, and lauded then and especially Dr. Bryan for what had been done to advance an uphold the honor of dentistry, especially Americans abroad.

Dr. Bryan had been announced to speak upon the work of th "Foreign Relations Committee" but by reason of the nearnes of the national meeting at Niagara and some "quiet tip he ha received," he did not go into details as was expected. He referre in this connection to the United States navy case of Captai Coughlan who on his return from Manila spoke too much, an was censured by his colleagues and superiors. He said, howeve that foreign laws are now entirely excluding the American dentis Referring to reciprocity, he said that foreign countries could not l expected to reciprocate with us when our States did not recipr cate with another.

The only solution of the difficulty, he believes, would be national diploma.

Closing, he gave a toast to American dentistry, which w drank standing.

Dr. Truman following, took exception to a statement ma by Dr. Bryan to the effect that men come to this country, and af only six months' attendance at college were granted diplomas w which they returned to their native countries. He claimed th Dr. Bryan should have been more explicit, as in his opinion g colleges did not do so. He said, however, that there certainly w great prejudice abroad against the American dentist.

Dr. Smith, of Harvard, thought that a great deal of the troul abroad was due to the fact that dentistry was regarded as a tra rather than a profession.

Dr. B. F. Luckey, of New Jersey, was emphatic in his vie regarding the necessity for reciprocity between the States.

Dr. Head, of Philadelphia, considers the great advance of medicine to be due to the large number of college bred men who are in its ranks—while in dentistry they are comparatively few.

Dr. Chas. Kimball said that strengthening the preliminary requirements was the best method of securing college bred men to enter dentistry.

Drs. Parmlee, Howe, LeRoy and Ames spoke on the lines of reciprocity—in fact it was very evident that all present regarded the present status of affairs as between State and State very unsatisfactory.

Dr. Bryan, in closing, spoke on the unification of State laws and general dental reciprocity. He said that in Switzerland medical men from abroad are obliged to pass the same examination and requirements as dentists, and that it virtually meant going to school again. Cited the case of a young man, a graduate of a Chicago dental school, who had practiced some years in this country after graduation, and going to Switzerland to assist Dr. Bryan, was now sitting on the bench at school with a cap on taking the very preliminary studies in order to comply with the law.

Referring to Dr. Truman's remarks that he had not been explicit, Dr. Bryan said they had not found a single college exempt.

There is a marked discrepancy somewhere. Our good colleges have always strenuously refuted such allegations. Dr. Bryan is possibly acquainted with facts, else he would have been more moderate in his expressions.

"THE BOROUGHS."

MEMORANDA.

Are you going to Paris in 1900?

Japan will have a representation at Paris in 1900.

Dr. J. E. Grevers, of Amsterdam, was at Niagara Falls.

Dr. Yule, of Wellington, New Zealand, was at Niagara.

Dr. C. D. Snow, of Mankato, Minn., was in Chicago in July.

Dr. L. K. Fullerton, of Waterloo, was in Chicago in August.

Dr. J. W. Noble, of Hong Kong, China, attended the meeting at Niagara.

Dr. Geo. H. Chance, of Portland, Ore., was in Chicago in July for a few days visiting friends.

Lawson Tait, Esq., M. R. C. S. England, and F. R. C. S. Edin, is dead at the early age of fifty-five.

Dr. Geo. H. Cushing, of Burbank, Cal., spent a few days with old friends in Chicago in July and August.

Dr. W. E. Griswold, of Denver, Colo., stopped in Chicago on his way to Niagara Falls to attend the National Dental Association.

Dr. G. S. Nason, of Omaha, Neb., was in Chicago the last of July on his way to attend the National Dental Association at Niagara Falls.

Dr. L. P. Leonard of Waseca, Minn., was in Chicago the last of July. He was on his way to Niagara Falls to attend the National Dental Association.

The dental congress at Paris will open August 8, 1900, and continue until the 14th inclusive. As the medical congress will meet the week before there will be clash between these meetings.

Drs. Wm. Jarvie, Brooklyn, N. Y., H. S. Sutphen, Newark, N. J., Geo. H Chance, Portland, Ore., were added to the Paris Congress Committee, and W. E Griswold was elected secretary of the committee.

Did it ever occur to you that *your* teeth might become loose? What would you do in such a case as that? What preventive remedies should be taken? I wash my mouth and teeth every night and morning thoroughly. Do you?

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The board is made up as follows: W. C. Jocelyn, Cairo; A. C. Barr, Alton H. W. Pitner, Fairfield; J. G. Reid, Chicago; and J. H. Smyser, Chicago. Next meeting in September, at Springfield, about the 29th.

The Northern Illinois Dental Society meets in Elgin Wednesday and Thursday, October 18 and 19, 1899. A good programme is in course of preparation, and all dentists of Northern Illinois are requested to be present, as a reorganization of the Society is contemplated. JAMES W. CORMANY, *Secretary.*

SOUTHERN WISCONSIN DENTAL ASSOCIATION.

President, F. S. Knapp, of Platteville; First Vice President, Charles Pierce of Janesville; Second Vice President, Ad. Gropper, of Milwaukee; Secretary, H. Reed, of Lancaster; Treasurer, W. G. Hales, of Mineral Point.

Next place of meeting, Janesville, May, 1900.

The next meeting of the Illinois State Board of Dental Examiners will be held in Springfield September 29 and 30 at the Capitol Building. Those desiring to take examination will please notify the secretary of their desire to take same two weeks previous to the time for the examination Friday, September 29.

Chicago, August 8, 1899. J. H. SMYSER, D. D. S.

We learn with profound sorrow that Mrs. Cunningham, the mother of Drs. Geo. and C. M. Cunningham, of Cambridge, England, died early in July at her home, Merton Hall, Cambridge. Having known and appreciated Mrs. Cunningham for many years, we know what sorrow and desolation must be cast over that cheerful household where every one was made to feel at home by the hostess

WISCONSIN STATE DENTAL SOCIETY.

Following are the officers of the Wisconsin State Dental Society for the ensuing year: President, Dr. J. H. Reed, Lancaster; First Vice President, Dr. T. M. Welch, Waupun; Second Vice President, Dr. R. J. Wenker, Watertown; Secretary, Dr. W. H. Mueller, Madison; Treasurer, Dr. H. A. Palmer, Janesville. La Crosse was selected as the next place of meeting. Date, third Tuesday in July, 1900.

INTERNATIONAL DENTAL CONGRESS.

Comité d'organisation, Central du Japon: MM. E. Obata, Président d'honneur; K. Takayama, Président; M. Aoyama, Vice Président; S. Enomoto, Vice Président; Dr. M. Ichinoi, Vice Président; Dr. S. N. Isawa, Vice Président; Dr. T C. Suganuma, Vice Président; S. Tomiyasu, Vice Président; Dr. Louis Ottofy, Secrétaire; M. Araki, Trésorier.

OFFICERS OF THE NATIONAL DENTAL ASSOCIATION.

President, B. Holly Smith, Baltimore; Vice President from the East, John I Hart, New York; Vice President from the West, T. W. Brophy, Chicago; Vice President from the South, M. F. Finley, Washington, D. C.; Recording Secretary Geo. H. Cushing, Burbank, Cal.; Corresponding Secretary, Emma E. Chase, St Louis; Treasurer, Henry W. Morgan, Nashville. Executive Committee: H. A. Smith, Cincinnati; T. S. Waters, Baltimore, and J. D. Patterson, Kansas City Next place of meeting, Old Point Comfort, last Tuesday in June, 1900.

NEBRASKA STATE DENTAL SOCIETY.

The annual meeting of the Nebraska State Dental Society was held in York, May 16-19, 1899. Officers elected for the ensuing year were: President, W. A Ivory, Wayne; Vice President, W. H. Sherraden, Omaha; Recording Secretary, W. R. Clark, Seward; Corresponding Secretary, Leah Mills, Omaha; Treasurer, H. J Cole, Norfolk.

The next meeting will be held in Omaha, beginning the third Tuesday in May.

LEAH MILLS, *Cor. Sec'y.*
Omaha, Neb.

At the annual meeting of the New Jersey State Dental Society at Asbury Park, July 19 to 21, the following officers were elected for the ensuing year: President, Wm. E. Truex, Freehold; Vice President, F. Edsall Riley, Newark; Secretary, Chas. A. Meeker, Newark; Assistant Secretary, H. S Sutphen, Newark; Treasurer, Henry A. Hull, New Brunswick. Executive Committee: Oscar Adelberg, Elizabeth; H. S. Sutphen, Newark; Wm. L. Fish, Newark; Frank L. Hindle, New Brunswick. Membership Committee: Wm. H. Pruden, Chairman, Paterson; N. M. Chitterling, Bloomfield; F. G. Gregory, Newark; G. M. Holden, Hackettstown; J. L. Craber, Orange. Member State Examining Board, Chas. A. Meeker, Newark.

MISSOURI STATE DENTAL ASSOCIATION.

The Missouri State Dental Association, at its thirty-fifth annual meeting July 11 to 14, 1899, at Kansas City, Mo., elected the following officers:

Dr. W. L. Reed, Mexico, President; Dr. S. J. Smith, Columbia, First Vice President; Dr. A. M. Tutt, Liberty, Second Vice President; Dr. B. L. Thorpe,

St. Louis, Corresponding Secretary; Dr. H. H. Sullivan, Kansas City, Recording Secretary; Dr. J. A. Price, Savannah, Treasurer. Next place of meeting Louisiana, Mo., the first Tuesday after July 4, 1900.

B. L. THORPE, *Cor. Sec'y.*

MINNESOTA STATE DENTAL ASSOCIATION.

The sixteenth annual session of the Minnesota State Dental Association was held in Northfield, July 25, 26 and 27, 1899. It was one of the most successful meetings of the association.

The following officers were elected for the coming year: President, Dr W. N. Murray, Minneapolis; Vice President, Dr. J. M. Walls, St. Paul; Secretary, Dr. H. L. Cruttenden, Northfield; Treasurer, Dr. H. M. Reid, Minneapolis; Chairman of the Executive Committee, Dr. F. H. Orton, St. Paul Master of Clinics, Dr. A. Owre, Minneapolis.

The next meeting will be held in Minneapolis, doubtless at one of the Lake Hotels at Minnetonka, time to be fixed by the Executive Committee.

H. L. CRUTTENDEN, *Secretary*

SOUTHWESTERN MICHIGAN DENTAL ASSOCIATION.

DEAR DOCTOR: We most cordially invite you to be with us at our nex annual meeting to be held at South Haven, Mich., September 5 and 6. And in doing so, we also request of you to furnish a paper or clinic upon any subjec which you may have at your disposal. Give this a second thought, doctor, as w want to hear and see you.

South Haven is beautifully situated on the east slope of Lake Michigan there are beautiful drives, smooth roads for cycling, splendid fishing, fine sur bathing, steam launches and yachts. South Haven lies in the north center of th Michigan fruit belt.

Come everybody; bring your wives and sweethearts. A good time guarar teed, and many visiting dentists expected. Yours truly,

F. H. ESSIG, *Pres.* C. E. BURCHFIELD, *Sec'y.*

IN MEMORIAM.

The following resolution was passed at the recent meeting of the Minneso State Dental Association, held at Northfield:

WHEREAS, It has pleased an all-wise Providence to remove from among our worthy brother, Dr. Immer C. St. John, with whom we have been closely associated in our professional work for many years,

Resolved, That this association deeply regrets the loss of his genial fellowsh and wise counsels, and extend to his bereaved family our sincere sympathy: ar be it further

Resolved, That a copy of these resolutions be spread upon the records of th association, and a copy sent to the family of the deceased.

L. C. DAVENPORT,
W. N. MURRAY,
S. BOND.

H. L. CRUTTENDEN, *Secretary.*

THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

A PLATE VULCANIZED BETWEEN METAL.*

BY LELAN OTIS GREEN, D. D. S., CHICAGO, ILL.

I have a full upper model with antagonizing bite mounted on the articulator. A piece of tin foil, No. 10, is placed over the palatine surface, burnished to position with a pledget of cotton gently



FIG. 1. Model covered with tin foil.

orcing the foil into place, taking care not to tear it by using too nuch force. After working the foil into close proximity to the nodel over the whole surface to be covered by the plate, an "apple eed" burnisher is used to smooth out all wrinkles and folds, are being taken to adapt the foil perfectly over the surface of the

*Read before the Chicago Dental Society.

model reproducing as nearly as possible the natural rugæ. Now with care remove the foil and coat the surface of the model over with shellac varnish, and while wet place the foil back again in position. After the varnish is thoroughly dry, I use finely powdered soapstone on a ball of cotton to polish the foil—rubbing it vigorously. A piece of "tea lead" (such as can be gotten from the inside of imported tea boxes) is laid upon a glass slab, and with a toothbrush handle is burnished out perfectly smooth. A layer of this is placed on the model over the foil and worked into place by

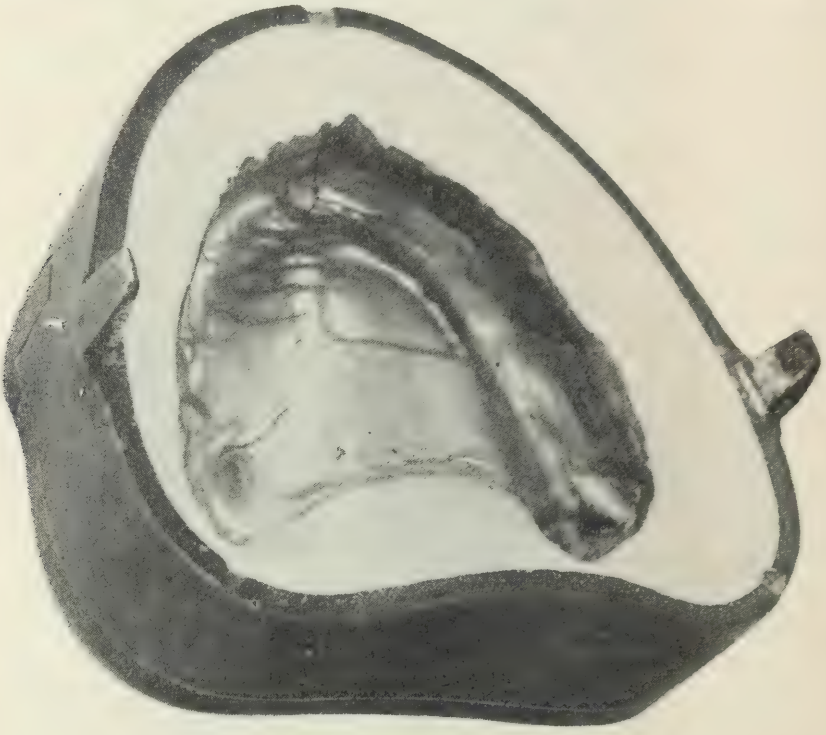


FIG. 2. Counter model, tea leaded.

the use of cotton pledgets and burnishers—same as I adjusted th tin foil.

This is repeated, covering each previous layer until there ar three thicknesses of "tea lead" well burnished and adherin together. This represents the thickness of the proposed rubbe plate; it should now be removed from the model carefully and th entire edge trimmed as indicated. When replaced, a small rim c wax is placed on the alveolar ridge, just sufficient to hold the artic ulated teeth in position and cover the heads of the pins smoothl care being taken to keep all wax off the palatine surface and awa from the rugæ as well. On the labial and buccal surfaces th gums are formed with wax in the usual way.

Another piece of the smooth "tea lead" is now taken and carefully adapted over the palatine surface, allowing it to run up over the occlusal surfaces of the teeth just far enough to catch and remain in the plaster with the teeth when the flasks are separated. The flasking is done in the usual way. When separated, the three adhering layers of "tea lead" are removed, and the wax boiled out. On the model side of the flask there is a bright tin foil surface, and on the other portion a dull "tea lead" surface.

Before packing the rubber in position I take a ball of cotton saturated with thick soapsuds, and thoroughly soap the tin foil surface, in order to prevent the foil from adhering to the rubber



The cut in this plate is to show its thickness after vulcanizing.

hen vulcanized. The "tea lead" surface is polished with mer-ury by rubbing with cotton. The higher the polish given to this rface, the more finished will be the vulcanized surface.

Rubber when vulcanized between two polished surfaces of etal is turned out as highly polished as is the metal surface in ontact. After the case is vulcanized, pull off the tin foil and tea lead." Scrape, carve and polish the labial and buccal ortions in the usual way. The palatine surface you will find olished, but in order to give it a high finish, I take my softest rush wheel and whiting; in this way you obtain a beautiful high nish that you cannot get otherwise. A plate constructed in this ay I consider to be much stronger than the old way of making

plates. Vulcanizing between metal tempers, so to speak, the rubber, and it will bend or spring, whereas the ordinary plate would break. This method produces a plate of uniform thickness, and is worn with much more comfort to the patient, being very thin and light, also reproduces the rugæ of the mouth.

Erosions in Japan.*

By Louis Ottofy, D. D. S., Yokohama.

In presenting this brief paper on dental erosion, as I have observed that condition, during my brief residence in Japan, I desire first to congratulate the American graduates on the organization of this society.

It is probably known to you that the causes which produce the peculiar solution of the substance of the teeth, to which the term "erosion" has been applied, are at the present time, entirely unknown. I have not had the opportunities which many of you have enjoyed, of examining the teeth of the Japanese race, but have been obliged to limit my observations to the mouths of Japanese as I see them on the streets, the trains and the shops and one of the first conditions to which my attention has been directed, aside from the frequency of irregularities of the teeth, is the extreme prevalence of erosion among the Japanese race. Indeed, I have noted cases of erosion of such a character, the like of which I have not seen in twenty years of observation. That possibly something in the climate, food or some other circumstance may be the cause of this condition has been forcibly brought to my notice by the fact that I have examined a number of cases among foreigners, all of whom have been long residents of Japan none of them for a period of less than twenty years. As a rule the condition as it has been observed by myself and others in the United States is confined to a V shaped incision, usually close to the cervical margin of the anterior surfaces of the teeth, and principally the incisors, cuspids and bicuspids. Occasionally I have seen exceptional cases where a large portion of the tooth has been thus dissolved, but I have never seen the remarkable conditions which have forced themselves on my attention, especially as regards foreigners. I have three of these cases specifically in mind, in a

*Read before the American Dental Society of Japan, Tokio, June 3, 18

of them complete solution of the anterior half of the entire crown has taken place. In one instance, all of the teeth remaining in the mouth are thus affected; in the other, as is not uncommon to the disease, the teeth affected vary, one tooth being dissolved to the extent of having the anterior half entirely dissolved, while the adjoining tooth on each side is wholly unaffected.

I do not present this subject to you with the view of throwing any new light upon it, but merely for the purpose of creating a discussion, which may eventually result in the discovery of the causes of this condition. It occurs to me that if in Japan can be formed the solution of this question, the labor and efforts of the members of our profession, residing in this country, will not have been spent in vain.

I shall pursue some systematic investigation of this subject, and trust to be aided by the natives who are members of this society.

I have formed some views regarding the causes of erosion, for I have noted conditions here which exist nowhere else to the same extent; but inasmuch as these views are not substantiated by proofs. I refrain from expressing them until such a time when I can prove their correctness.

The Use of Antiseptics and Disinfectants in Dentistry.

By Dr. Leah Mills, Omaha, Neb.

"Not failure but low aim is crime." This is my excuse for undertaking a subject of such magnitude and far reaching application. I cannot hope to present it as it deserves by reason of its importance, and yet I felt it better to fail even than to succeed with a subject of doubtful value. And then I know it is a subject from which much good will result from a discussion, and after all, discussion is the chief source of benefit from any paper in such a meeting as this.

This has been termed the age of scientific progress, and in the medical world perhaps no greater advance has been made than along the line of bacteriological research. Since Pasteur's discovery of the specific organisms of various diseases—studying their nature and virulency in different habitats, with an effort, usually successful, to destroy or render comparatively harmless by proper

antiseptic treatment these organisms were found to exist, there has never ceased the effort to trace every disease back to its source. Sometimes the desire to trace every disease back to some specific organism has led its devotees to find germs where they only perhaps exist in imagination; but the world owes Pasteur a tribute for the benefits he has conferred; and Lister, the first surgeon to practice antisepsis, voices it in this wise: "Your researches on fermentation have thrown a powerful beam, which has lightened the baleful darkness of surgery, and has transformed the treatment of wounds from a matter of uncertain and too often disastrous empiricism into a scientific art of sure beneficence. Thanks to you, surgery has undergone a complete revolution, which has deprived it of its terrors, and has extended almost without limit its efficacious power."

Is it too much to say, that what Pasteur was to surgery in general, Miller, of Berlin, has been to dentistry? He was not the first to advance the thought that decay of the teeth is attributable to bacteria. Ficinus, a physician of Dresden, is given credit for that in 1847; but perhaps even earlier than that it was suggested by Prof. Erdl. Even back so far as 1683, Leeuwenhoek gave descriptions and diagrams of several kinds of bacteria found in the oral cavity. But Miller was the first (I think I am correct in this) to give to the world the fully elaborated chemico-parasitic theory of decay, and to present it in such a way as to properly impress the profession with the vast importance attaching to the presence of bacteria in the oral cavity, and the antiseptic precautions necessary in all operations performed therein.

Miller has been followed by a host of others in his investigations, among whom the most prominent and most read, at least in our country, stands Dr. Black. For him to undertake a thing is to do it thoroughly, and perhaps no more accurate information concerning bacteria of the oral cavity can be obtained than from his writings on the subject.

Along with the study of bacteria as a natural sequence of the same, came the use of antiseptics and disinfectants. Prevention is the watchword in combating the invisible but mighty foes. Dr. John H. Girdner, in an article on "Disease Germs" in the March *Munsey*, says the old adage should be made to read "An ounce of prevention is worth *ten* pounds of cure," and I think we can testify that it appears an easier matter to prevent their entrance into so

tissue than to destroy them after they enter. In hard tissue this does not prove wholly true. And yet the papers appearing on the "prevention of decay" are sufficient evidence that even here many believe the ravages of bacteria more readily prevented than repaired.

Bacteria finds access to the human organism through the oral and nasal cavities more readily than any other way. The former by reason of the conditions of heat, moisture, and media of development, makes it a most favorable location for these accidental bacteria to lodge and develop. That this is true is easily proven by an examination under the microscope of saliva from a reasonably well cared for mouth. When such an examination is made from a mouth receiving little or no care, the number and variety of organisms is little less than startling. Not only the bacteria instrumental in producing decay and diseases of the gums, but those producing disease in various parts of the system, the pneumococcus of Frænkle, the Klebs-Loeffler bacillus of diphtheria, the typho-bacillus, in fact, most pathogenic organisms, as well as many nonpathogenic have been found in the oral cavity. If the gums or any tissue of the oral cavity are diseased, or the natural power of resistance of any portion of the system be weakened, these accidental germs may thereby be afforded entrance, with serious result. Likewise the swallowing of pus from chronic abscesses and the toxic poisons produced by bacteria in the various diseases of the soft tissue, may produce anemia, indigestion, and even more serious disorders. Surely then, the responsibility devolving upon us as dentists, to use every means at our command to control these conditions, and to impress upon our patients the necessity of proper prophylactic measures on their part, cannot be too strongly urged.

Von Mostig Moorgof says: "Operative dentistry in its bloody interferences is a specialty of surgery. Those who practice it must necessarily then be acquainted with at least the fundamental principle of the modern science of surgery; this principle is antisepsis, and the dentist ought not and dare not practice without it."

When we consider the results of carelessness in dental and surgical operations, too great stress cannot be placed upon the necessity of proper care. In nineteen cases reported by Miller, fifteen resulted in death, three in obnoxious diseases and one in nervous illness and permanent disfiguration, from want of proper care in extraction or after it. He records many cases of death

from meningitis, pyemia, etc., directly traceable to infection from alveolar abscess or septic material in the pulp chamber. My brother attended a gentleman some time since who died of blood poisoning following an extraction. He said there was no doubt in his mind but that it was the result of an infected instrument.

Some time since, while working for a young woman, she remarked on the care I bestowed on my instruments, with quite a degree of interest. She then directed my attention to some deep pits just over the right malar bone and gave me their history about as follows: Some six years previous she had noticed some black specks there, presumably some imbedded foreign particles, which she could not remove. She went to a physician and had them removed; but instead of healing they suppurated, and continued to partially close and then suppurate for four years. When they did finally heal, they left pits only a little less unsightly than those left by smallpox. She said, "I may be unjust, but I always feel that it was due to an unclean instrument being used." Well, I felt that the criticism was a very mild sort of justice.

Now this was a physician's error, but errors of the same kind by a dentist may be quite as serious, or more so. Our work under the most favorable conditions is performed amid numerous bacteria, ready to cause mischief on the slightest occasion, and there can be no excuse for not disinfecting all instruments and appliances used in our operations. There are many methods. Each doubtless has its advantages. Personally, I place the instruments in a vessel, sprinkle over them bicarbonate of soda and then pour on them boiling water. The soda is antagonistic to acid forming bacteria and prevents corrosion of the instruments. This is done before putting instruments away. Then if the instrument is to be used in soft tissue, I dip in a hot solution of carbolic acid, particularly if it be unhealthy tissue.

The extensive use of antiseptic and disinfecting agents has opened up an extensive field which the manufacturing chemist have not been slow to occupy. On every hand are these antiseptic solutions, each lauded by its representatives as best. Dr. Peck gives it as his opinion that borolyptol will stand at the head, but says he has not yet carried it to its limit and in his tests so far has found it to vary in results. I believe the field has been overworked, and think more simple compounds might be used with more satisfaction to ourselves and equal good to our patient

Dr. H. C. Wood, professor of therapeutics in the University of Pennsylvania, says on this subject: "Except formalin solutions, there is no disinfecting mixture sold which in proportion to the price is comparable in power to the simplest disinfectants recognized by the pharmacopeia, and yet the markets of the United States are loaded down with proprietary disinfecting solutions, most of them absolute frauds, many of them certified to by leading members of the profession."

You have doubtless all read the results of Prof. Peck's investigation of the comparative strength of antiseptics in the *Cosmos* for January. This is more than an ably written paper. It is the outcome of a tremendous amount of labor, and Prof. Peck certainly deserves the thanks of the profession for giving in so clear a manner the results thus obtained. He found oil of cassia, oil of cinnamon, formalin creosote, oil of cloves and oil of bay taking the lead in point of potency, as follows: In each the amount represents the requirements for preventing growth in 10 c.c.m. of infected broth; cassia, $\frac{3}{10}$ gtt. or 1 part to 2,223; cinnamon, $\frac{3}{10}$ gtt. or 1 to 2,100 parts; formalin, $\frac{4}{10}$ gtts. or 1 to 1,400; creosote, $\frac{5}{10}$ or 1 to 1,280 parts cloves, $\frac{6}{10}$ gtt. or 1 to 1,150 parts; bay, $\frac{7}{10}$ gtt. or 1 to 1,028.

I was somewhat surprised to learn of the efficiency of cloves and was pleased to adopt it where I had been using camphophenique in ordinary cases of pulpless teeth. I had never noted any unpleasant results from the latter, but thought I had better use an agent whose antiseptic value had been proven than one that so far as I knew had not been tested.

Peroxide of hydrogen and pyrozone each required six drops to prevent growth in 10 c.c.m. of infected broth, or was effective 1 part to 58. Not nearly so powerful as some others, but considering the strength in which it may be used, a very efficient antiseptic in root canals, in abscesses, in diseased conditions anywhere in the oral cavity. It is a favorite with me, and I use it in almost all treatment cases. I use it for a mouth wash, but have hesitated about recommending it to others, as some preparations contain so much acid it might prove harmful. I had the opportunity recently of noting its effects when used in dilute solution for postnasal catarrh, and the results were very gratifying. However, it was not my purpose to advocate any one particular antiseptic or disinfectant, but to plead for *antisepsis* first, last, and always.

Our Present Knowledge of Dental Caries.*

By H. Prinz, D. D. S., St. Louis, Mo.

Dental caries is a universal disease of the human race; its origin may be traced back to the earliest obtainable data of history. The affection is relatively unlimited and of such importance to the dentist that we may safely say: Without dental caries we would have no dentists. In consequence of its universality, investigators have been occupied from the earliest days to find an explanation of its cause. The various theories which were brought forward are in harmony with the ruling doctrines of the healing art and changed accordingly with the advancement of medical knowledge. The pathological history of caries may be classified in six groups:

1. The humoral theory of Hippocrates (456 B. C.). It was still upheld by Serre, in 1788.

2. The theory of inflammation of Galen (131). Boedecker and the late Abbott are its strongest advocates at present.

3. The parasitic theory of Ringelmann, 1884.

4. The chemical theory. It was endorsed by the leading scientists up to 1884. Such men as Tomes, Watt, Taft, Magitot, Baume, Harris, etc., are found among its upholders.

5. The electro-chemical theory, first advanced by Bridgmann. At present it is still defended by Palmer; and

6. The chemico-parasitic theory, first mentioned by Erdl in 1843, later by Leber and Rottenstein, Black, Milles and Underwood, etc. Miller finally demonstrated by actual experiments the direct etiology of the disease which he thus sets forth: "The cause of dental caries is a chemico-parasitic process of two distinct stages, the decalcification or softening of the tissue and the dissolution of the softened tissue." The acids which cause the calcification of enamel and dentine are for the most part produced directly in the mouth, as a result of fermentation. Carbohydrates—namely, such which contain sugar, starch and gummy substances, as sweets, bread, potato, etc.—furnish ample material for the process.

By the action of the organized ferments of saliva, i. e. ptyalin, hydration is installed, splitting the higher compounds, such as sugar and starch, in the more simpler ones, mostly glucose. The

*Read before the St. Louis Dental Society.

bacteria of the mouth will then cause the further splitting of the glucose, or similar molecules, in lactic acid.

$$\underset{\text{Starch.}}{C_6H_{10}O_5} + H_2O = \underset{\text{Glucose.}}{C_6H_{12}O_6}$$

$$\underset{\text{Cane sugar.}}{C_{12}H_{22}O_{11}} + H_2O = \underset{\text{Levulose.}}{C_6H_{12}O_6} + \underset{\text{Dextrose.}}{C_6H_{12}O_6}$$

$$C_6H_{12}O_6 = 2\underset{\text{Lactic acid.}}{C_3H_6O_3}$$

Caries usually begins with the destruction of the enamel. Through the able researches of J. L. Williams, of London, Eng., much light has been thrown upon this hitherto dark phase of pathology. By his superior histological technique he was fortunate to demonstrate more clearly the formation and composition of the tissue, which he found to consist of a calcified cement substance and of prisms, composed of globules of uniform size. Dilute acids which are brought in contact with enamel seemingly destroy the binding substance more readily than they do the prisms themselves. The remnants of Nasmyth's membrane in the sulci and the approximal surfaces of the teeth give ready starting points for the lodgment of food material, which furnishes an excellent pabulum for the growth of bacteria. Thick, felt-like masses of acid-forming microörganisms may be seen at these places adhering to the surface of the teeth. "This mass of fungi is so dense and adhesive as to make it highly improbable that the enamel is affected, except in rare or special instances, by any acid other than that which is excreted by the bacteria at the very point where they are attached to the enamel. This thick, gelatinous like mass of fungi also prevents the excreted acid from being washed away, so that it exerts its full chemical power upon calcific tissue." The decalcified enamel and dentine often do not break down directly. Caries may advance rather deeply before the formation of a cavity occurs. The progress of destruction is probably depending upon the organism present, or rather upon its acid-producing capabilities.

Miller separated twenty-two different species of bacteria from the human mouth; sixteen of these brought about an acid reaction; some others possessed the power of converting sugar into lactic acid; some other forms produced gases, etc. He was able to produce artificial caries in all its phases by using mixed cultures from

the mouth, but failed to attribute this power to a *single* organism. Caries, undoubtedly, results from a mixed infection of fungi. In a recent paper Williams describes a new organism which he found almost constantly present in the oral cavity, more so in healthy mouths, even after fair sterilization. The same bacterium has been described by Vicentini, of Naples, Italy, and is called by him leptothrix racemosa. By ingenious microscopical methods, Williams succeeded in completely demonstrating the different stages of spore formation of this organism. By exhausting the pabulum and by changes of the surroundings, the morphology of certain species may be altered to such a degree as to exhibit entirely new forms which may lead to misconception on the part of the observer. "The belief that there are far fewer true species of bacteria than have been catalogued has steadily gained ground among botanists and histologists, if not among pathologists."

The assertions of Dr. Williams may lead to very far reaching conclusions and are seemingly incomprehensible if based upon our present conception of bacteriology.

By the dissolution of the enamel a gateway is opened to the invading bacteria upon the less resistant dentine. Caries progresses in a cone-shaped form, the apex being pointed toward the pulp. In mounted sections of well developed caries we may be able to define four distinct zones. The first or outer layer is the so-called transparent zone. It is only found in teeth with live pulps, never in replanted teeth or in artificial caries. This seems to point to the fact that some vital process from within the tooth is connected with the phenomenon. Miller endorses Walkhoff's theory, viz.: An increased activity of the cells which results in an overproduction of intercellular substance. Transparency is an optical phenomenon; it merely indicates that two mixed substances have the same angle of refraction and are therefore penetrated by the rays of light. Wellauer claims no caries without transparency. It seems plausible to accept Walkoff's theory; the lumen of the dental tubuli is reduced by calcification and the per cent of lime salts of the dentine in this zone is increased as shown by analysis. Nature seems to build a barrier toward the advancement of disintegration. Clinical experience verifies this fact. Transparency as well as pigmentation are merely secondary matters in the progress of caries. The latter may be coincidental either with chromogenic bacteria or

with food material which lodges in the cavity. All stages from light yellow to black are observed; the quicker the advancement of bacteria, the less pigmentation.

At present, we must admit without doubt that the destruction of dentine is a chemical process, viz.: A decalcification by an acid. Carious dentine has lost more than two-thirds of its inorganic constituents. The decalcification is more pronounced in the periphery, lessening toward the apex. A well defined microscopical picture will show the central caries penetrating through the enamel and spreading laterally in the dentine and toward the pulp. Bacteria are usually smaller than the lumen of the dental tubuli, hence the latter offer a ready gateway for their advancement. This shifting forward is not necessarily equal in all directions, it is materially influenced by the resistance of the dentine molecules. The superficial layers of softened dentine are filled with bacterial forms. The deeper layers of softened dentine are not infected; the decalcification precedes the invasion of the bacteria themselves into the dental tubuli. This is a most important point in consideration of its clinical value. Such dentine has evidently not lost its entire vitality; it is often hypersensitive. Furthermore, a thin layer of such dentine, if left over the pulp impregnated with some strong antiseptic, will not cause recurrence of decay. It might even be and seems to be verified by clinical demonstrations that the once softened, but uninfected dentine may reconstruct itself. By observing slights under high power one finds the dental fibrillæ often obliterated, loose fragments surrounded by cocci are seen here and there.

Cement caries progresses very much the same as in dentine; Sharpey's fibers are first affected and the bacteria follow the path of these fibers.

After having briefly passed over the more important facts of the pathological changes in the tooth substance, we may now consider for a few moments the predisposing causes of caries. From Miller's explanation of the phenomenon, which has been so masterly supplemented by Williams' beautiful microphotographs, we know that the conditions in regard to the predisposing causes of caries must be sought for in the tooth itself or in its surroundings. Structural defects of the enamel, viz., fissures, pits, or defects of form of the tooth, will offer ready spaces for retention of food particles. Irregular position of the individual teeth may also help in

forming places for lodgment. According to Black's investigations we find that there is practically no difference between the so-called hard or soft teeth in regard to the quantity of lime salts, the molecular arrangement of the calcium deposits in the matrix of the tooth is *the* factor. The color of the teeth, which is an optical result of crystalization, is only of indirect value; the denser the adhesion of enamel molecules, the more shiny the surface, the greater the resistant power.

The question of vitality of dentine as a factor in the process of caries is the fulcrum of the followers of the theory of inflammation. Dentine has no circulation and no connective tissue fibers, the two fundamental principles for the support of this theory. The only source of vitality in dentine is traceable to Tomes' fibers and Neumann's sheaths, but very lately Dr. Roemer has been able to demonstrate without doubt for the first time nonmedullated nerve fibers in dentine and these nerve fibers are found to be strictly identical with what has been regarded till now as two different structures, namely, the above mentioned Tomes' fibers and Neumann's sheaths. These fibers radiate from the cornua of the pulp toward the junction of enamel and dentine, ending in club-shaped end organs, which helps to explain the increased sensitiveness in those particular regions. A direct formative action in the dentine proper is excluded. Secondary dentine may be formed in the pulp chamber as a result from irritation upon the odontoblasts. The prolongations of the odontoblasts are the linings of the dental tubuli. The transparent zone, which is a distinct feature of carious dentine in live teeth, owes its peculiarity properly to the same origin which caused the transparency of senile dentine.

The surroundings of the teeth as a predisposing factor of caries are of marked importance. As stated above, our daily food, more so the carbohydrates, furnish an abundance of pabulum for the growth of microörganisms. The physical conditions of the food materials, viz., hardness, grit, acidity, etc., may exercise their deleterious influence upon the enamel. The secretions of the mouth have been looked upon suspiciously. Chemical analysis of normal saliva does not point to anything which might be dangerous to the teeth; per contra, we believe it possesses some antibacterial power which manifests itself in the fact that those teeth which are constantly bathed in this fluid are practically free from caries. This is not alone due to its mechanical cleansing; we know that lesions

of the oral cavity heal very quickly in spite of being an incubator for microörganisms.

Among practitioners we find an almost general preconception in regard to predisposition of caries during pregnancy. To Dr. Biro, of Budapest, is due the credit of substantially ratifying this dogmatic presumption. From a large series of statistical examinations of nonmothers and mothers having been gravid one or more times, he arrives at the surprising conclusion that pregnancy and caries are in no direct relationship whatever, and that pregnancy does not exercise a favorable influence upon the occurrence of this disease. It seems so very plausible that during gestation the lime salts which are needed for constructing the osseous system of the fetus are resorbed from the teeth. But why nature should pursue such a course was never explained. Would it not be simpler to assimilate a greater percentage of the lime salts which our daily food furnishes? Even the plainest table supply contains enough calcium to satisfy the wants of mother and child. If there should be an increased need for an inorganic material, the bones of the body will have to suffer the loss; a process of resorption goes hand in hand with inflammation, which may occur in bones (osteomalacia) but never in teeth. Hyperemesis during gestation has probably certain bearings on the rapidity of the carious process, but this depends on various circumstances.

Besides the above named factors as predisposing causes of dental caries, there are a variety of unknown forces—as, for instance, chemical changes within the cells of the individual or certain periods of life, viz., the climacteric age of the female—which may cause a sudden destruction of a perfect denture which has escaped the disease for two or three decenniums. The last score of years has brought much light upon hitherto unknown fields of scientific dentistry. Still, many of the conditions in regard to cause and predisposition of caries are at present veiled in obscurity, and I beg to close my few remarks with a sentence chosen from the pen of the genial Dr. Williams:

"These fluctuations in decay of the teeth which we have so long observed are due not to changes in tooth structure, an hypothesis which could never be held for a moment by those who understand how slow the changes in dentine are and how impossible any true physiological change in enamel must be, but to changing conditions of the environments of those microörganisms which constitute the sole exciting cause of dental caries."

Dentistry in Japan.*

By Louis Ottofy, D. D. S., Yokohama, Japan.

My first paper on dentistry in Japan must as a matter of necessity prove to be a disappointment to my friends, and this is true in face of the fact that I am surrounded with material for collection, methods of practice for observation, data for study, statistics and scientific facts for record, which, if not accomplished by those trained and versed in occidental methods and customs, must of necessity be lost to posterity. That I am unable to supply such a paper as I would like to have read before the Chicago Dental Society, is due, first, to the brief period during which I have enjoyed the opportunity to study the situation, and to the lack of familiarity with the Japanese language. At this writing (February 4), I have been in Japan exactly seven months. During the first three months of that time the complete change of life, custom, and my establishment in business, made it impossible to collect any material amount of data for my paper, and when I commenced to do so I found a serious disadvantage in my lack of knowledge of the customs and the language of the Japanese. The latter I am now attempting to learn. This led me to inform the program committee of your society to extend the time when my paper should be read, from January to March, with the result that at this time none of my observations have been sufficiently thorough or systematic to be placed on record as anything else than mere personal views on totally strange conditions. I shall therefore, confine myself in this brief paper to a discussion of dental things Japanese, leaving for some future time the completion of the investigation and the study of matters of interest from a scientific point.

Before saying anything regarding dentistry in Japan, I wish to make the statement, that I have found all Japanese with whom I have come in contact—either practitioners, editors, teachers or dental dealers—strictly courteous, and my failure to elicit more information is due principally to my lack of knowledge of their language than anything else. I have visited a number of Japanese dental offices of the leading men—some of them graduates of American dental colleges—down to the smallest shops in the poorest of neighborhoods. I have been unable to learn much as to their methods of practice. I have found that the roots of teeth

*Read before The Chicago Dental Society.

are filled with cotton, which is an extremely pleasant filling material when viewed from the standpoint that it is very simple for me to remove the tooth filling when cases of abscess present themselves. Crowns are only made by a few, and all those which I have as yet seen were gold caps, on centrals and cupids, as well as on bicuspids and molars. Bridge work is practically unknown and continuous gum work is entirely unknown. At least, it is claimed by the Japanese that their people will not and many cannot pay the fees this class of operations must command. Artificial dentures are confined to the rubber base, using principally plain teeth, the roots of broken teeth being permitted to remain *in situ* and unfilled; the impression is usually taken in wax or modeling compound. A good quality of cement, resembling the preparations of the German formulæ, and a bad quality of gutta-percha are used for filling purposes. Of the amalgams on the market I know as yet nothing, and they make poor fillings with them. Gold foil is made here equal to anything I have used in the States, and with the use of ammonia I am enabled to alter its cohesiveness according to my desire. I have seen a large number of gold fillings which were made by the Japanese which would be serviceable and very creditable indeed if they only protected the margins of the cavity, and did not have such an irresistible desire to peel off, little by little, or come out altogether in too short a time. All gold fillings are beautifully finished on the labial surface, the lingual evidently not being considered so important, not being exposed to view. With such as I have seen, penetrating into many of the dental offices, no American dentist could work at all; in most of the offices there is the usual Japanese style of window, which is simply a line of glass, from eighteen to twenty-four inches wide, running the full length of the room about four feet from the floor, throwing fair light, I judge, on the chest of patient. I noticed that some operators have also observed this fault, and have had a skylight made, which would enable a man to have ample light to put in a filling in a tooth embedded in the frontal bone. It so impressed me that these two conflicting lights only made the darkness, where the light ought to fall, more intense.

With few exceptions the chairs are all old style; some few foreign made dental engines are in use, most of the engines in use are of Japanese make. The practice of blackening the teeth, as a sym-

bol of the marital state, on the part of women, is becoming obso-
lete, yet a number still continue the practice, and I have seen a
cleverly made plate, the missing incisor having been made of black
rubber, neatly carved to resemble its neighbor; full sets of black
teeth are thus made, without using any teeth at all. I visited three
out of five of the dental depots and dental goods manufacturers;
they all carry a fairly good line of goods, many of them imported
and many made here. I have not had occasion to purchase any
instruments as yet. I noticed they look well and are finely fin-
ished, and (as a dentist here told me) they would be very good
if they would not bend under pressure. I told him I found no
fault in that, but in the instruments he showed me, the fault was
that after bending under pressure they did not resume their origi
nal form, which to my occidental way of looking at things, was a
serious fault. He told me he experienced the same trouble with
the forceps, of which he showed me a pair; the handles are strong
and will last a lifetime, but the beaks just "give" a little, that's
all; after a time a pair intended for the incisors has spread enough
to be used on the molars. On the whole, the imitations are clever
but from personal experience I cannot speak of the utility of the
instruments. I notice that most of the teeth made in Japan for
rubber work are pinless, having an undercut for the retention of
the rubber (platinum being expensive), and pinless teeth having been
found to lack in strength, they make a tooth with an undercut, into
which by means of sulphur, pins of German silver are sweated, a
clever thing representing much labor, costing 3 sen or one and a
half cents each, and, of which I am told, dentists make full sets of
teeth, for either jaw, at 3 yen each or for $1.50 U. S. currency.

I have noticed that the Japanese are undoubtedly a pro-
nathous race. From a cursory observation I would judge that
this condition prevails in not less than seventy per cent of the
race. When time permits I shall secure some reliable statistics
on this subject and present such views as I now hold as to its
cause, which is probably found in the methods of prehension
practiced by the race since times immemorial. I also observe that
irregularity of the teeth is very prevalent.

I have not yet been able to learn anything definite as to the
number of dentists in Japan (the country's population in round
numbers is forty million), and as near as I can learn there are
probably ten who are graduates of American dental schools; the

four whom I have met are splendid gentlemen. There are about two hundred so-called licensed dentists, and it is impossible to say how many "students" and others practice by tolerance. The total number, good, bad and indifferent, legal and illegal, practicing in the empire has been variously stated to me to be anywhere from one to three thousand.

A large number of books have been written by Japanese and many translations have been made, of which I have compiled a partial list, and the most important among them are:

Fillebrown's Operative Dentistry.
White on Taking Impressions.
Webb's Operative Dentistry.
Dental Jurisprudence from Amer. Syst. Dent.
Metallurgy from same.
Essig's Dental Metallurgy.
Richardson's Mechanical Dentistry.
Gorgas' Materia Medica.
Rymer's Dental Anatomy.
Anatomy from Harris' Princ. and Pract.
Dental Physiology, from same.
Pathology, from same.
Abbott's Dental Pathology.

Garretson's Oral Surgery and Parreidt's Compendium of Dentistry, which some years ago, I translated from the German into English, and quite a number of other extracts from other well-known American books. At some future time when I can complete the list I shall have it published. There are four dental journals, all published in Tokio. A résumé of their work will have to be prepared some time in the future.

Strictly speaking, there is only one dental school, so-called. This school issues a certificate at the close of a course of instruction, the efficiency of which I am unfamiliar with, the inefficiency I am perfectly able to comprehend. There is a national board of dental examiners, about which I know nothing.

There is a hidden power in Japan which has so far prevented the government from taking recognition of education in dentistry, while since 1887 it has authorized the conferring of the degrees of: doctor of law, doctor of medicine, doctor of engineering, doctor of literature, and doctor of science; and while on December 9, 1898, it added to those degrees the following: Doctor of pharmacy,

doctor of agriculture, doctor of forestry, and doctor of veterinary medicine, it is a notorious fact that the government wholly ignores dental education as a department of science. Of this more anon.

I have further made some inquiries into the industry of the manufacture of toothbrushes and tooth powders in Japan, and trust at some future time to give specific facts and data on these important topics, and to furnish specimens, not only in these lines but in many others of interest to the profession. I trust that during the summer, D. V., to make some tabulated records of the condition of the teeth of a prehistoric race, wholly unlike the Japanese, and known as the Ainos, who inhabit some of the northern islands of Japan, and a race which may well be likened to the North American Indian therein that the origin of the race is unknown, and that it is rapidly, like the mound builder, Aztec and North American Indian, passing from the face of the earth.

I trust my friends will excuse this incomplete paper, written, of necessity, after a barely cursory view of the conditions in a land whose dental history is practically unrecorded, and in which my investigations will be made only for the purposes which must result in an improvement of the existing conditions in and for the profession which I love so well.

Old Time Toothache Remedies.

By Dr. F. Skeede, Seward, Neb.

Among the various items with which I propose to bore you a this time, I have nothing new to offer, in fact, they are all copied from some one else. I merely propose to show by several unique, as wel antique specimens, that people were just as foolish two and thre hundred years ago, as they are gullible at the present time; as, fo instance, to powwow over an ulcerated tooth for three weeks, a was done by a Christian Science healer in our town (who, by the way, was also a graduate in medicine) and the poor woman tol me she really believed had it not been for Christian Science, she would have died. Another sample of modern medical science—medical—occurred at Chicamauga last summer. One of our soldie boys went to sick call one morning with an ulcerated tooth an badly swelled jaw, and the wise regimental M. D. prescribe quinine and castor oil.

As the old lady said, to cook a rabbit, first catch the rabbit. In like manner to treat a toothache successfully, we had better first cut our teeth and examine some of the remedies for alleviating some of the accompanying troubles. If a child would be lucky, it must cut its first tooth on its mother's wedding ring. It is said that a child who cuts its teeth hard will be successful in life, and one who cuts its teeth easy will be short lived. In some places, it is unlucky for a child to see itself in a mirror before it cuts its teeth, as it will be vain and proud. In the South, the foot of a mole hung around the child's neck with a string, is said to aid in cutting the teeth. Mole's feet can be purchased at the drug stores, along with snuff and whiskey, in most of the southern States. The following is from an old medical work, published about 1680: "For convulsions in teeth—bleeding. Bleeding and the seton are recommended, then the following powder in a teaspoon of jalap should be given for three days, morning and evening: Take of human skull prepared, of the root of Male-Paeona, each one dr., of powder of pearls, two grs., white sugar, one dr. Mingle them and make a very fine powder."

The following is from Notes and Queries: There lived in Belfast, Ireland, in 1731, one Jane Hooks, 112 years of age, who had her memory and appetite as well as when she was but twenty. And she has a new set of teeth which has drove out all the old stumps.

Mrs. Page, at the Royal Oaks, Southwark, ninety years of age and upward, has lately cut six great teeth in the upper jaw; June 1732, has not had a tooth in her head these twenty years past. Edward Proger, of London, died December 31, 1713, aged ninety-six years, of cutting teeth and had several ready to cut, which so inflamed the jaws that he died from the anguish thereof.

Another correspondent of the same journal says, "So far from these cases being extraordinary, I venture to assert very few persons arrive at my age who have not three sets of teeth. I speak from experience. I had my infantine set; next I had a set which served me usefully for many years, gradually decayed and left me; now I have a third set, which I can truthfully say, I suffered much cost in the cutting by an eminent dentist in the west end." A group of ladies at a popular resort were discussing the teeth of their acquaintances. "Would you believe it," remarked a rather elderly maiden lady, "my wisdom teeth have not yet grown."

The silence which followed was broken by a male voice from the outer circle, "Some century plants never bloom."

Shakespeare says there is no cure for an aching tooth; let us see.

In the year 1545, the first medical work in the English language was printed in London, entitled, "The Brevyary of Health." In chapter 97 you will find the following:

"A tooth: Dons is the Latin word; in Greek it is called Odons; in English it is called a tooth. A tooth is a sensible bone, which being in a living man's head, hath feeling, and so hath no other bone in man's body, therefore the toothache is an extreme pain. This pain doth come either by a humor descending out of the head to the teeth or gums, or it may come by corroding or eating of worms, or it may come by corruption lying on or between the teeth, or it may come of drinking hot wines, or eating hot spices, or it may come of a hot lyever or stomache. Remedy: First purge the head with pills of Cochte, and use gargaryces, and if it do come of any cold cause, chew in the mouth divers times, the root of Homhome; and if it do come of worms, make a candle of wax with henbeme seeds and light it and let the perfume enter the mouth and gape over a dish of cold water, and then may you take the worms out of the water and kill them on your nail, the worm is a little greater than the worm in a man's hand; and beware of pulling out a man's tooth—for pull out one, pull out more.

To munchify the teeth, wash them every morning with cold water and a little rock alum."

The Chinese believe in the worm theory, and also people in many other parts of the world. In some countries, what is known as "wormy lines," are written on paper and carried about as a charm. Formerly, in some parts of England, to extract the worm, a small quantity of dried and powdered herbs were placed in a cup and a live coal of fire dropped into it; the patients held their mouth over the cup and inhaled the smoke as long as it could be borne, then they breathed hard into a cup of water a few minutes when it was supposed the worm could be seen in the water.

Among the Indians, Roger Williams records the fact that while they could endure every other pain, toothache was too much for them. In Buffon's Natural History it says: "People believe that a piece of rope with which a criminal has been hung

is a cure for colic, sciatica and toothache." In Spain, to kiss an unbaptized child was a preventive. An early English remedy was to drive a nail taken from a coffin into an oak tree. Among other remedies are rubbing the gums with an ant, bee or ladybug, the spine of a dog fish, kissing a mule, burying a tooth in the hole of a mouse, carrying the tooth of a soldier killed it battle, or, still better, the tooth of a murdered man, were good medicines. An old lady in Canada used to sell a recipe for an English shilling which was a sure preventive. It was: Always cut your toe nails on a Friday and never think of a red fox. Should all these fail (and they may) and you wish to be rid of the devil entirely, try this specific, which was published in 1610: To make an aching tooth fall out, take wheat meal and mix with the milk of the herb called spurge. Make a paste of dough, with which you shall fill the hollow of the tooth, and let it be there a certain time, and the tooth will fall out of itself. Also, if you wash your mouth with wine wherein the root of this herb has been sodden, you will never have pain in your teeth.

Our Annuals.

By An Old Member.

The National Dental meetings of 1899 were of far more than usual interest. It was well known in advance that very much depended upon them and that our professional weal was deeply involved. Perhaps a brief review of what occurred, viewed from the standpoint of a professional observer, may be of interest.

Much was hoped from the meeting of the National Dental Association. For some years the old American had been in a bad way, and interest in its meetings had sadly fallen off. Two years ago, at Old Point Comfort, the American and Southern were consolidated, avowedly because neither was strong enough to stand by itself. Last year's meeting at Omaha demonstrated that the new organization was little if any better than that which it was to supersede, for it was one of the weakest ever held. This was attributed partially to the fact that it was the first trial of the new machinery, and that the management was phenomenally weak. It was conceded that the new constitution and by-laws were no improvement over the old, and that, in fact, the whole thing was a hodgepodge, a piece of patchwork, possessing neither consistency

nor strength. All the faults of the old were embodied in it, with certain new ones that it must have required an inventive genius of no mean order of perversion to devise. It was discovered that the services of the constitution tinker were in immediate demand, and the results of the mending were presented at the Niagara meeting. It is predicted that, like most efforts of that kind, two holes will be made for every one stopped ; but time will determine. It would perhaps have been wiser to throw the old, worn-out kettle away and make a new one.

The meeting at Niagara was one of the largest ever held, and it was presided over by a good parliamentarian, who had discovered that the office of a chairman is to decide and direct, and not to temporize and argue. His decisions were prompt and precise, and usually correct. At any rate, he ruled without the garrulity of an old woman over her tea. He had exerted himself energetically to secure enough of papers, but like the good Methodist preacher in his prayer, he rather overdid it, and instead of a shower he induced a flood. There was not time for the consideration of half the papers presented, and only two or three of the sections secured any adequate consideration of their program. Had it not been that some of the papers were taken up out of the regular order, that which most of the members came to hear would have never been reached at all. As it was Section II. absorbed by far the greater portion of the time, because it exercised seemingly no discretion whatever, but shoved in all it had, and so was responsible for the taking up of the time of the association by some papers which were but a burlesque upon scientific essays. It probably submitted the best papers read, but it also gave about the worst.

It is doubtful if the method of soliciting papers promiscuously produces the best results. Well, probably it is not at all doubtful, but positively a vicious practice. The chairmen of sections publish in the journals, some time in advance of the meeting a general invitation to every one to contribute what he will, and then dumps the whole promiscuous lot upon the society. The best and most thoroughly qualified writers do not respond when they know that their own productions will be swamped in a mass of communications of the crudest kind. On the other hand, the men who have some ulterior purpose to compass are at once in evidence. If one has a special axe to grind, a gimcrack implemen

to advertise, or an absurd theory to advance, or if he desires to glorify himself and secure in his local paper the notice that Dr. Paradismus Trumpeter read a paper before the National Dental Association, which was received with tumultuous applause, of course his proffer of an essay is the first made.

This is something that should be remedied. There should be some power behind the section chairman to which all papers should be submitted, and which should have authority to reject the whole or a part of everything that is submitted. As it is, some good fellow, who has but the crudest ideas of science, or who has some personal scheme to advance, in a grandiloquent manner produces his paper and charts or models in the section, and dilates upon the importance of that which really is trivial. The chairman does not like to take the responsibility of ruling him out, and thus mortally offending him, and the members hold their peace, each waiting for the other to speak. An embarrassing silence succeeds, and finally, to end it, a member moves that the paper be received and presented, and the association becomes its victim.

Under our present lack of system, and with the existing ramshackle association machinery, this taking up of the time of members with fool papers can only be remedied through the chairmen of the sections. If each of them would, early in the year, make a list of subjects germane to the work of his section, selecting enough to cover the field of his work, choosing such as are of timely and vital importance, and if he would then solicit papers from the men whom he knew had made special studies in that particular field, and would inform them of his method of obtaining papers, he would get those of a character that would attract attention, and would make his section what it should be. He would find no difficulty in enlisting the services of the best writers, when they became assured that their productions were not to be read in connection and classed with the crudities which now too often make up the section presentations.

The best meetings are by no means the biggest ones and success is not to be measured by mere numbers. The treasury is not the first consideration, and a surplus there may very readily be obtained at the cost of everything that should distinguish a meeting. Business affairs should receive due attention and be managed with prudence and wisdom. But, when constant constitution tinkering and discussion of methods of procedure and dental depot

questions and protective association matters crowd out the consideration of scientific and professional papers, it is time that a reform should be instituted, or the association disbanded. All of those may be vital to our best interests, but so are national politics and religious creeds. Yet each of them has a place in which it may be properly discussed, but that place is not the meetings of the National Dental Association. When we get so that we can clap a stopper on those who attend our sessions for the purpose of pulling the wires, or to work some private scheme of their own, and use our body to turn their personal grindstones, and when we can sew up the mouths of those who simply talk that they may hear the sound of their own voices, and who laboriously attempt to pump from an empty reservoir, we shall have meetings better worth the attendance.

Facts and Fallacies of Electricity.*

By John Egbert Nyman, D. D. S., Chicago, Ill.

Mr. President, Ladies and Gentlemen: It must be admitted that there is among people in general, and among those of our own profession in particular, the most lamentable ignorance of even the simple fundamental principles of the science of electricity; and with that strange persistent perversity impossible to explain, the ignorant prefer to pin their faith to fallacy instead of fact. The believer in the fallacies extant in regard to electricity not only deceives himself and those who come to him for advice and treatment, time and again, but lays himself open to deception and imposition by unscrupulous sharps who know the difference between fact and fallacy, who are quick to discover his ignorance and take advantage of it. One of the first uses ever made of electricity was in the treatment of disease. The pagan priests of old Phœnecia Rome and Athens, calling it the spirit of a reanimated soul, and shrouding it with supernatural attributes, made it so mysterious that the people regarded it with mingled fascination and awe under which spell mankind still lingers, even after the passing of nearly thirty centuries.

It is mysterious and it is fascinating; but it needs not the mummeries of fallacy nor the shroud of superstition to make it so

* Read before the St. Louis Dental Society.

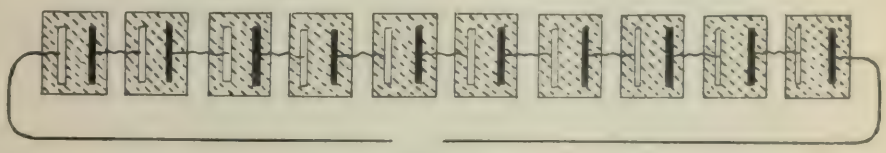
it is marvelous even when viewed in the light of facts with the eyes of reason and of knowledge.

The cures effected by its application in the far away days of the past when it was first applied were purely accidental; it was used haphazard for every disease that mankind may be afflicted with, without any knowledge of its properties and its effects. And, believe me, even to-day in this enlightened century of ours the ignorance and the practices of the pagan priest are still to be found.

The use of electricity for the treatment of disease has now and always has had the favor of popular approval.

This attracted to the field unscrupulous fakirs, who saw in the practice of it a chance to make money out of the credulity of the people, and who practiced the rankest kind of impositions to their own profit.

They flocked to the field in such numbers that the legitimate scientific medical men, scorning to associate with and unable to



c Carbon
te Plate

Series Grouping.

FIG. 1.

avoid contact with such disreputable medical quacks withdrew rom the field of electro-therapeutics in disgust, and the practice f it fell into disrepute with the medical profession until matters nally came to such a pass that it was worth an honest doctor's putation to have it known that he used it in his practice, because t was a method of practice so largely used and exploited by the uacks.

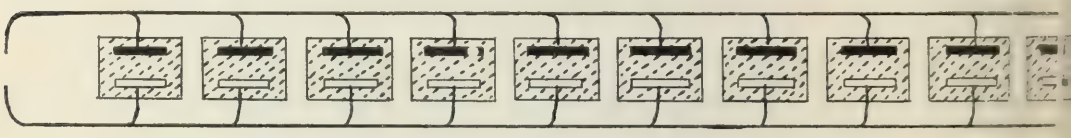
This was a most unfortunate state of affairs, as there was merit n electro-therapeutics, and the skilled scientific physician would ave soon discovered it and by investigation have broadened its cope of application, thereby benefiting all mankind.

Thus, for a long period this science lay dormant and in disre- ute. Finally, and fortunately, there came forward a few men with aith enough in the science and sufficient courage of conviction to rave the condemnation and scorn of their fellow practitioners nd investigated the so-called mysteries of electricity. The results

of their investigations having stood the test of time, other men took up the work, although few comparatively were fitted for it, because of their ignorance of the physical and chemical laws governing this science.

Thanks to those who were fitted to, and who did take up the work, it was raised out of disrepute into repute, and from an incoherent chaotic mass of mingled fact and fallacy, into the dignity and stability of a science, the principles of practice of which are accepted by both the medical and dental professions, and applied daily in the practice of medicine, surgery and dentistry. Still, even to-day there are fallacies masquerading as, and mingling with facts, and accepted as such by the ignorant, and also by those who ought to know better.

And what are these fallacies? The first that may be considered is the prevailing idea that we must have electricity in quantity to accomplish anything with it. This is a most erroneous



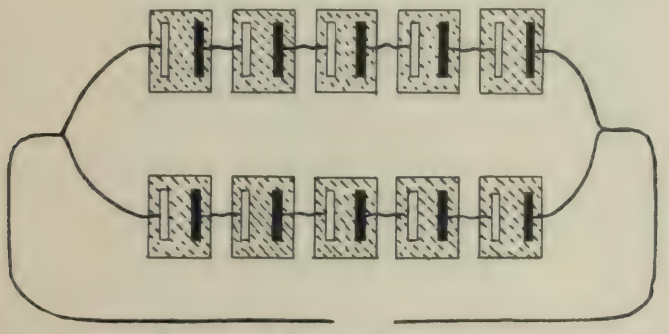
Parallel Grouping.
FIG. 2.

idea; the prerequisite is that we should have electricity under *pressure*. The earth in itself is a vast supply reservoir of electricity, and we would have no need of batteries and dynamos if we but needed electricity in quantity, as there is more in the earth and atmosphere than man could possibly need for all his uses of it. For analogy: Steam, like electricity, has no power to do work except when accumulated under pressure. Neither do our batteries and dynamos *create* electricity; that was created when the world was, and none has been added to its stock since that day. Batteries and dynamos do not in any manner create electricity they merely call it forth from its latent state, *accumulate* it, and send it forth under pressure.

Another fallacy is that the size of a battery has anything to do with the strength of current which may be obtained from it. The current from a two by four battery would be every bit as strong as one from a twelve by six battery, the only difference being that the larger battery would run for a longer period without polarizing and would give a current for a longer time than the smaller one

would. The strength of current which is expressed by the term "volt," is dependent upon the *difference of specific electro-potential of the materials* used for the plates of the battery. For instance, if one plate was of copper and one of zinc, the electro-motive pressure from the battery would be about a volt and a half. It would be this quantity no matter what size you made your battery, whether it be a large or small one. If, however, in place of the copper plate a plate of carbon was substituted, we would then obtain a voltage of about one and nine-tenths or nearly two volts. This is due to the fact that the difference in specific electro-potential between carbon and zinc is four-tenths of a volt greater than the difference in specific electro-potential between copper and zinc.

Another factor in regard to the strength of current, although a comparatively unimportant one, is the nature of the excitant or



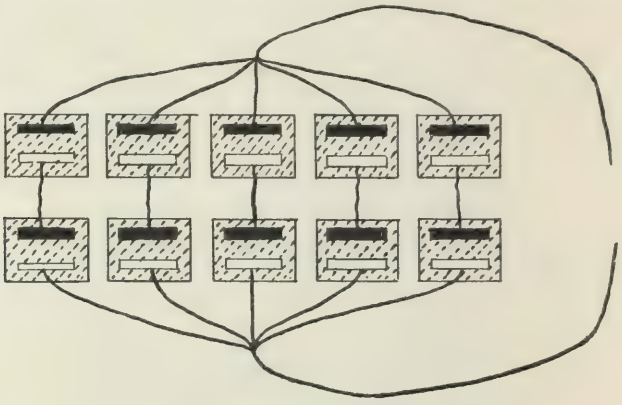
Multiple Series Grouping.

FIG. 3.

electrolyte that is used. As a rule, these are acid solutions, and while it would seem the stronger you made the solution the stronger current you would obtain, nevertheless it is not true. A twelve per cent solution is about the best strength; a stronger one weakens the current, because it offers more resistance to it.

The application of the unit terms of electricity is also but little understood. We speak of electricity as being under so many *volts* pressure, just as steam is referred to as being under so many *pounds* pressure. We speak of a current of electricity flowing at the rate of so many "amperes" per second, the same as we would of a stream of water flowing five miles an hour. We speak of an electric conductor as having so many ohms resistance, the same as we would speak of so much friction in a line of shafting. These units all have a relative value. If we know the value of any two,

we can find the value of the third. For instance, if we know the voltage to be 100 volts, and the resistance be 500 ohms, we know that we will get two-tenths of an ampere flow through the circuit. In other words, the amperes are equal to the volts divided by the ohms. From this it is apparent that the ohms are equal to the volts divided by the amperes, and the volts are equal to the ohms multiplied by the amperes. As an example of fallacious views held by those who ought to know better, a man who was to testify as an electrical expert in a case in court, stated that the amperes were equal to the volts minus the ohms. While another learned gentlemen of my acquaintance once told me that "ohms and



Multiple Parallel Grouping.

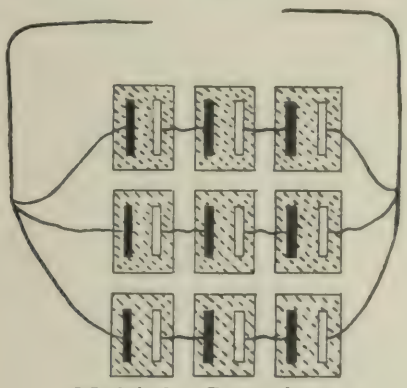
FIG. 4.

amperes were synonymous terms and meant one and the same thing."

It should be borne in mind that all these units are definite quantities; that an ampere is an ampere, no matter from what source of supply it is drawn. The writer recently noticed the statement in one of our most prominent dental journals from a gentleman who said that in order to secure a certain result, a current of five milliamperes from a ten-cell battery was necessary. Later on in the same article, in referring to another electro-therapeutic measure, he stated that it would require a current of five milliamperes from a twenty-cell battery. One not conversant with electricity would certainly and most naturally infer that a current of five milliamperes from a twenty-cell battery was stronger than a current of five milliamperes from a ten-cell battery, whereas they are both the same. Five milliamperes are five milliamperes no matter what battery they come from. Of course, if the internal r

sistance in the second case was greater than that of the first, it may have required a battery with a larger number of cells to supply the additional voltage which would be necessary to secure the desired current flow.

Another fallacy is the idea prevalent among some people that there is no difference between the action of the positive and negative electrodes upon the tissues of the body, when the fact is, there is all the difference in the world. The positive electrode liberating the acids of the tissues in the vicinity of it and exerting a styptic and solidifying effect, while the negative electrode liberates the alkalines in the tissues in its vicinity and has a softening, liquefying effect upon them. Then, too, the positive electrode



Multiple Grouping.

FIG. 5.

has a sedative effect, whereas the negative electrode has an irritant effect.

There is another fallacy—that dry batteries and storage batteries are one and the same thing; in fact, a gentleman of my acquaintance who pretends to know a good deal about electricity once flatly told me so, saying that the amount of current that would be obtained from a dry battery was equal to the amount that was put into it and stored up there; whereas the dry battery is a primary battery pure and simple, with plates of two different materials, usually zinc and carbon, the excitant being of some solid material, while a storage battery consists of two plates of the same material, usually lead, the excitant being some fluid. Moreover, it is not electricity that is stored up in a storage battery by passing a current into it, but chemical energy. After a current has been run through a storage battery for a time, one of the plates becomes converted into peroxide of lead, while the other is reduced

to spongy lead. Upon shutting off the supply current, and establishing a circuit, the excitant will act upon this peroxide of lead plate, and start a current which will flow from the battery in the opposite direction to that which the current that charged it, so to speak, entered it. This current will continue until all of this peroxide of lead has been reconverted into lead again. When this is done, the battery may be restored by passing a current through it again. The advantage of a storage battery is that it is remarkably efficient in voltage, the plates are not destroyed by the excitant except to a very small degree, and there is no polarizing. But please bear in mind there is nothing dry about a storage battery and nothing stored in a dry battery.

Another example which may be cited showing ignorance of the fundamental principles of electricity is that of a gentleman who one day made to me the startling statement that he had discovered that one primary cell was more than sufficient to obtain anesthetic effects in cataphoresis, because he had found that upon short circuit he could obtain a current of five amperes from the the cell, whereas but two-tenths of a milliampere were required for cataphoric applications. That gentleman was serenely ignorant of the fundamental law of electricity known as Ohm's law, which is that "the rate of current flow is directly proportional to the electro-motive pressure" or amount of voltage, and "inversely proportional to the resistance" or number of ohms. If he had been familiar with that law, if he had also known that the resistance of the human body is anywhere from 25,000 to 250,000 ohms averaging perhaps about 60,000 ohms, then, if he had known that the average constant efficiency of a primary cell is only about one and one-half volts, he never for an instant would have labored under the delusion that one primary cell was sufficient to obtain the action desired. With an average resistance of 60,000 ohms, will require an electro-motive force of twelve volts to secure a current flow of two-tenths of a milliampere. This would require battery of at least eight cells connected in *series*.

The use of the last term suggests another fallacious notion that is current with some people; that the terms *series*, *parallel* and *multiple* when used in connection with batteries are indefinite terms of little significance. This is a great mistake. These different groupings of cells produce entirely different effects in the current which will be obtained from a battery. When we speak of *series*

grouping, we mean that the cells are connected end to end, that is, the carbon plate of one cell is connected with the zinc plate of the next cell, and so on throughout the entire battery. (See Fig. 1.) This increases the voltage directly according to the number of cells in the battery, but gives no greater rate of flow or amperage than we would obtain from a single cell. For instance, ten ordinary primary cells connected in series would give us a current of about fifteen volts, with a rate of flow of about four amperes.

When we speak of parallel grouping, we mean that the cells are set up side by side, and all of the carbon plates are united in one common terminal, while all the zinc plates are united in another common terminal. (See Fig. 2.) This would give us a current the voltage of which would be that of a single cell, while the rate of flow would be in proportion to the number of cells in the battery. If we were to take the ten cells previously referred to and connect them in parallel grouping, we would get a current from them of one and one-half volts, with a rate of flow of forty amperes upon a short circuit.

When we speak of multiple grouping, we mean that part of the cells are connected in series, and part of them in parallel. Thus in a ten-cell battery, if we group the cells in two sets, five cells in each set, connected in series, and then the two sets connected to one another in parallel connection, we will have what is known as a multiple grouping, more technically speaking, multiple series grouping. This modification is used because most of the cells are in series grouping. (See Fig. 3.) The current that would then be obtained from that battery would be one of seven and one-half volts and eight amperes. If, on the other hand, we were to group them again into two sets of five cells each, the five cells in each set being connected together in parallels, while the two sets were connected to one another in series grouping, we would also have a multiple grouping, but more technically speaking, multiple parallel grouping. This modified term is used because most of the cells are connected in parallel. (See Fig. 4.) The current from this battery would be one of three volts and twenty amperes. If, however, in a multiple grouping the same number of cells are connected in series, and the same number in parallel, it is simply referred to as multiple grouping. (See Fig. 5.) The difference in these various groupings of cells and the effect upon the current should be borne in mind because each grouping is necessary for

peculiarly different applications of the electric current. For instance, in cataphoric work it is necessary to have the cells grouped in series, because we require comparatively high voltage with comparatively small rate of current flow, whereas in electro-plating work it is advisable to group them in parallel, as a comparatively low electro-motive force but comparatively high amperage is necessary; while to operate some of the electro-cauteries it is necessary to group the cells in multiple, as we wish to secure a current of as high voltage and high amperage at the same time as is possible to obtain.

Another fallacy is that volt selectors, current adapters, fractional volt selectors, and rheostats are peculiarly distinct apparatus, each of which imparts to the current some peculiar quality. This is an entirely erroneous impression. The afore mentioned instruments are all some form of resistance coils; the volt selectors and current adapters cutting down the current in abrupt and widely varying quantities, while the fractional volt selectors and rheostats increase and diminish the current in a very gradual manner. This fallacious notion has been taken advantage of by unscrupulous dealers in one case that I have personal knowledge of, where a man purchased different instruments, designed for the same purpose, because of the impression given him by the salesman that each instrument imparted to the current some peculiar quality; that in some cases he would have to use the current adapter to obtain the desired effect, while he would find others where the fractional volt selector would have to be used. After purchasing these two instruments, another gentleman of easy-going conscience appeared in his office with a rheostat, informing him that there was still a third variety of cases in which he would have to use the rheostat, and of course he had one ready to sell. The man in his ignorance purchased all three.

Many people have a very vague idea of the differences in electric currents, and to them the terms direct and alternating have but little meaning. The same is true of the terms galvanic, faradic, and static electricity. Briefly they may be explained as follows: The direct current is the one in which the flow is constantly in one direction. This term is further modified into continuous direct and interrupted direct current. The continuous direct current is that which we obtain from primary and secondary batteries. The interrupted direct current is that which is obtained from the direct dyna

nos; although the interruptions are so frequent that when used for ghting and heating they are scarcely noticeable, but in electro-nerapeutic work in the region of sensitive nerve filaments, the ulsating character of the current is sometimes plainly noticeable.

The alternating current is one in which the direction of the ow is continually being reversed, flowing one moment in one di-ction, and the next moment in the other. It is, of course, at the me time an interrupted current. It is of use for heating and ghting purposes and in minor degree for electro-therapeutic work, aving a stimulating, irritating effect upon muscular tissue and erve fiber. It is absolutely valueless for such work as cataphoric nesthesia, bleaching, or for electrolytic work of any description.

The term galvanic is applied to the current which is obtained om the primary and secondary batteries; in other words, it is a ontinuous direct current.

The term faradic, on the other hand, is usually applied to the nterrupted alternating current, as generated by induction in the nduction coils.

By static electricity is meant that current of extremely high oltage and extremely low amperage, which is obtained from in-uction machines, such as the Toepler-Holtz. It is a direct inter-pted current. It is used mainly for its stimulating effect on uscular tissue and nerve filament.

Another fallacy that the profession has labored under for me time has been the idea that the stronger current applied in effort to obtain cataphoric anesthesia, the quicker would the sult be obtained and the more profound and lasting would be the esthesia. As a matter of fact, the crowding on of the current acticed by so many operators really defeated the purpose they d in view. Electrolysis was carried on faster than cataphoric tion could take place, and in addition to that the structure of e tooth was heated in such a manner as to make the operation extremely painful one, with negative results at the end. There a certain fixed rate of current best adapted for this work; as an erage, it may be stated at two-tenths of a milliampere. Pressure fficient to obtain this flow should be applied and no more. When s figure is indicated by the milliamperemeter, there is nothing do but simply allow this rate of flow to continue for a period on average of ten minutes. This will give the desired anesthetic ect without any disagreeable pain during the application of the

current. For bleaching by cataphoresis a current of five-tenths of a milliampere will be found sufficient, although the period of time that this flow is to continue must be varied according to the judgment of the operator in the case at hand.

A milliamperemeter is almost an absolute necessity in order that these rates of flow may be accurately determined. The forcing of the current beyond these points is a needless waste of it and jeopardizes the success of its application.

There are a few public fallacies in regard to electricity which while not having any direct bearing upon dentistry, may be briefly referred to and exposed. One is the idea that was given a great deal of publicity among newspapers recently that the X ray might be utilized as a means of coast defense; that from some centrally located point they could be trained upon a hostile battleship explode the contents of a magazine, and destroy her utterly. As a matter of fact, we have no means of developing the X ray to any such force as to be able to project it in an appreciable manner to a distance of even half a mile. Even if we could do so, we have no reason to believe that they could penetrate the steel armor of a battleship, and even if they did so, we have still less reason to believe that it would explode the powder in the magazine. The same romantic statement has been made in regard to the electric vibrations of the new wireless telegraphy. This is even still more ridiculous than the X ray scheme, because no effect could be produced in the magazine of a battleship unless there was installed therein a receiving coherer, a thing that it is scarcely likely an enlightened nation would do.

While referring to the wireless telegraphy, it may be well to state that there is little possibility of the visionary hopes of its enthusiasts being fulfilled. The likelihood is too remote to be considered that it will ever entirely displace the modern methods of telegraphy. There is no means of isolating these vibrations in their journey from the transmitter to the receiver. Were they to meet with another series of vibrations from another transmitter traveling in the same plane, the chances are that one of two things would happen: The two different sets of vibrations would either destroy one another, or else there would be a commingling of vibrations which would cause utter confusion at the receiver. The fact too, from the fact that it is impossible to accurately direct the vibrations, the operating of one transmitter might have a simul

neous effect on four or five, or even more, receivers that happen to lie within the varying zone of its influence. Then, too, the attempt to transmit these vibrations through the iron structures of the modern city buildings, full as they are with electric devices of various descriptions, and wires charged with high potential currents, would probably so alter them or retard them as to make the operation a complete failure.*

Another fallacy that the author has heard discussed from time to time is whether or no the development of electricity by dynamos and other agencies may not be increased to such an extent as to become a dangerous force among the elements of nature, and perhaps eventually cause the destruction of the earth. These fearful individuals would be relieved of their anxiety if they could but realize that the earth itself is the great reservoir of electricity; that all that developed by dynamos and the like is only drawn from the latent supply of nature, and furthermore, it is beyond the power of man to accumulate and store under sufficient pressure sufficient of it to damage even a small section of the globe. He might be able to destroy things for a couple of miles around a given point, but as for destroying this earth or any appreciable portion of it, it is beyond possibility, there is no need to worry about it.

The Architect of the universe has placed it beyond the power of man to advertently or inadvertently destroy this earth of ours —His handiwork.

Many dentists impatiently question the necessity of studying and familiarizing themselves with this science; for them it is enough that they press a button, or turn a switch, and the current does the rest. How it does it, or why does it, they know not, care not; and like the poet of old, they seem to feel that "where ignorance is bliss 'tis folly to be wise." They say they follow the instructions of the electrician who has devised the instrument, and if it fails to work they send for him and have the trouble corrected. This is all very well for off hand remarks, but hardly befits a scientific professional man. There is no danger that any of us will ever acquire such a store of knowledge that we will become top-heavy, and as a mere matter of knowledge the thing should be studied and understood. The more a man knows, the safer man he is for the public to entrust itself to. From time to time a man will find

*The recent tests that were made in Chicago demonstrated the correctness of the above conjecture.

himself operating on some bright, intelligent person who, interested in the, to him, novel and mysterious electrical devices now found in a modern dental office, will ply the dentist with questions concerning them, their method of application, and the manner in which this marvelous force operates them. If he can answer them in a clear, concise way, well and good. That patient's estimation of him will rise several points at once; and when he speaks of him to his friends, it will be that "Doctor So-and-So is a mighty bright fellow, and knows a good deal more than simply plugging and pulling teeth." If, on the other hand, he confesses ignorance or attempts to put him off with evasive answers, he will lose confidence in him at once; it will instill in him a constant dread that he may do him some frightful damage because he is using a force and operating an instrument that he knows nothing at all about, and if he speaks of him at all to his friends, it would probably be in such a way as to "damn him by faint praise." A thorough understanding of these electrical devices and of the fundamental principles upon which they operate is frequently of great service to the dentist, and may enable him to correct some slight derangement in a device in five minutes instead of waiting half a day for the expert electrician to get to him, and on the other hand he will know better than waste half a day trying to repair a serious accident which no one but an expert electrician could repair.

Then, too, the heights of fame are not all occupied yet; there is room for more up there, even though they are dentists. The field of electricity is as yet but little explored, and the opportunity for investigation and invention is as good as it ever was. One cannot hope to win any possible distinction while laboring in almost absolute ignorance. The accidental discoveries and accidental inventions are so few and far between that it is a waste of time to build any hopes of winning distinction by such a means.

The part this force plays in everyday life is something marvelous when we think of it.

Its applications are so varied and manifold and its versatility is simply wonderful.

It will signal messages from one room to the next or from one end of the earth to the other.

It enables us to listen to the voice of a friend, whether he be across the street or a thousand miles away.

It gives light from that of the glow of the tiny incandescen

light to the dazzling rays of the great searchlight of a battleship.

It gives us heat, varying from the gentle warmth of the electric blanket to the fierce white heat of the electric arc, which blinds the eye that looks upon it and melts platinum as though it were butter.

It enables us to glide over our boulevards at a pleasant pace, or whirls us over the country on steel rails at the speed of the limited express.

Reveals to our eyes things that to our eyes alone are invisible.

Soothes the sore muscles and aching nerves or rack the whole body with an agony unspeakable.

Brings back the spark of life when it seems gone forever, or as we walk about in the height of health and strength may stretch us lifeless in the twinkling of an eye.

And yet the irony of it all—familiar as we are with its manifestations—we do not know what it is, nor can we define it. The best that we can do is to simply say that it is "That thing, matter or force, or both, that produces electrical phenomena."

And who can say what limits girt its future—who can draw a boundary line and say "Thus far shalt thou go and no farther?" No one can and no one dare.

The latest researches in the science tend to the conclusion that it is the very essence of energy itself, and that all other forms of energy, such as heat, light and sound, are merely some modifications of it.

Oh, marvel of marvels, mystery of mysteries, thy name is electricity.

PROCEEDINGS OF SOCIETIES.

Chicago Dental Society.

Regular meeting May 2, 1899, the President, Dr. Garrett Newkirk, in the chair.

Dr. Louis Ottofy contributed a paper on "Dentistry in Japan," which was read by Dr. C. E. Bentley. See page 714.

DISCUSSION.

Dr. R. H. Kimball: I have been greatly interested in observing how much Dr. Ottofy has absorbed of the Japanese character in seven months, and I might say now, that what few gray hairs I

have were brought on, in a measure, by the same peculiar pulp canal fillings that he speaks of. Of the courtesy of the Japanese there can be no question, and that must supply the dental deficiency very frequently. They will be courteous, no matter what they may happen to do with a gold, amalgam, or root filling, as the doctor has described to you. I suppose the paper will be published, and perhaps its publication will not materially help Dr. Ottofy's standing with the Japanese, for if there is anything they will not tolerate it is criticism of their methods and their ways; at the same time, I think it will be beneficial. Why they have declined dental recognition is something that no one understands any better than Dr. Ottofy in the time he has been there. This has been talked of among the dentists who have resided in the East—the refusal of the Japanese government to take any steps toward providing dental education for young men who wish to know it. Many of the Japanese who have graduated in dentistry in this country have a thorough education on dental matters, but they have to overcome their own natural tendencies, and while I do not want to say anything unfair or unjust about them, after they have graduated here and have learned our methods, when they get back to their own country they seem to get back to their own methods. It is not an unusual thing to have a patient come to you who has been in the hands of a Japanese dentist anywhere from six weeks to three months to have a nerve killed, and you will meet with such cases all the time and the resultant conditions, and it is a wonder that more harm does not result, considering the number of dentists which Dr. Ottofy has spoken of, which I think is 3,000.

I do not know that I have anything further to say. I have been greatly interested in the paper; it reflects great credit on the writer to have absorbed and gathered so much readable information in the few months he has been there.

I wish to add this: Provided Dr. Ottofy does make an investigation of the conditions of the residents in the North Islands of Japan, it will furnish valuable data and material for scientific reading. They are a strange people, not even known to the Japanese. Few Europeans, who have visited these islands, have come in contact with them; they live by themselves, but they are a keen, wide-awake people buried in the North Islands.

Dr. L. O. Green read a short paper entitled "Vulcanizing Rubber Plates Between Metal."

The discussion was opened by Dr. H. J. Goslee. Dr. GOSLEE said: We have just listened to a practical paper, and I regret that I have not been able to have it in my possession long enough to discuss it to better advantage. I only received it about thirty minutes ago and have been able to simply glance over it. There are many advantages in vulcanizing rubber between metal. The main one was suggested to me a moment ago by Dr. Schwartz, aside from the finish, and that is, if you take a piece of hard rubber that has been vulcanized even between surfaces of plaster, the extreme outer surface of it is the hardest portion, and as you scrape away and cut down into the body of the rubber, it is not nearly so strong as that surface against which the model rested originally. As you approach the interior of the rubber it is more porous and not so strong. Take the soft rubbers, and it is impossible to vulcanize them with good results unless you do so between metal. You get far better results with hard rubbers if you vulcanize them between metals. All of the hard instruments, such as handles, etc., are vulcanized between metal, and it is this that gives them such density and strength. Manufacturers vulcanize penholders in metal dies or between metallic surfaces.

The particular advantage to my mind in the matter that has been presented to us by the essayist with reference to vulcanizing a plate is, that it is of uniform thickness. All of you, I am sure will agree with me that this is a great advantage. After you have covered the model with a layer of tin foil, the only object of burnishing three layers of tea lead is to give uniform thickness. The next layer of tea lead, which is burnished to the three preceding ones, is the layer which has a hard polished surface against which the rubber will be vulcanized. It is so shaped that after it is removed with the second half of the flask it leaves a surface of tea lead on one side and a surface of tin foil on the other, the three intervening layers of the tea lead having been removed, which, of course, gives a plate of uniform thickness.

Another advantage I want to emphasize is the reproduction of the rugæ in the plate. There is no question in my mind but that it is a big advantage in having the natural condition, as nearly as possible, reproduced in the plate. Take a plate that is more or less thick, if the rugæ are deep, it is an impediment to speech to a greater or less extent, and when the rugæ are followed out nicely by the plate, they offer less obstruction to the movements of the

tongue, and the plate can be made much thinner and still possess uniform strength.

I commend the paper; it is practical. By adopting this method many will save a great deal of the time spent in finishing afterward, because there is practically no finishing to do. There is a tendency in these later years to adopt those methods that are the quickest irrespective of whether they are always the best or not. We should avoid that tendency as much as possible.

Dr. F. N. Brown: I wish to say a word or two in regard to this process described by the essayist to-night. I have been familiar with it for some seven or eight years and cannot agree with him in many particulars. In the first place, I think three sheets of tea lead are entirely too few. If you make a plate of three thicknesses of tea lead it is useless; it is a plate that cannot be worn. I do not make as many of these plates now as I formerly did; I used to make them every little while, as far back as seven years ago. My recollection is that it will take from ten to fifteen sheets of tea lead to make a practical case. The first sheet of tin foil ought not to be less than No. 40, and it is preferable to have it No. 60. The question arises as to whether it decreases the model somewhat; it does, but makes a better fit. The thickness of tin foil ought not to be less than No. 40, and it may be well to leave out tea lead altogether. But if you do use it, you must expect to use anywhere from eight to fifteen layers to have a practical case. Less than that will cause your plate to be porous. In the next place the last layer should be tin foil, not tea lead. It makes a better surface and a better plate when vulcanized over tin than it does over lead. You can dispense with tea lead altogether by using as the first layer No. 40 tin foil. Take a piece of ordinary wax (if you want an air chamber cut in the impression and get the reverse in the model). Then use the piece of thick base plate wax, warm it carefully, so that it does not reach the melting point; carefully put it over the first layer of tin foil; it brings out the rugæ and air chamber and makes a better plate than if you had used tea lead. After it is hardened by holding it under a cold water faucet, you use a piece of No. 40 or 60 tin foil again over the palatine portion.

Lastly, I want to say there is only one kind of rubber that you can use successfully in this work, and that is black rubber.

Dr. Goslee: Why?

Dr. BROWN: Because it is a thin plate and the other rubbers are not substantial. Black rubber is the only material with which to make plates of this kind and make practical cases of them.

Dr. GEORGE W. SCHWARTZ: When I was in college in 1890 there was a good deal of work done in vulcanizing rubber plates between metal, and we had a very expert workman in our class. He did beautiful work. He covered the buccal surfaces with tin foil and always vulcanized between tin foil. He used black rubber, but it has been my experience and that of others that in the use of wax, as to reproducing the rugæ, I can readily see why Dr. Green's method would be far better than using wax. I know in my own experience I never could get the rugæ in wax where I wanted, and I have tried it many times, and as Dr. Green has been pitched into with reference to reproducing the rugæ, I feel like defending him. With metal you can regulate the rugæ much better than with wax. Tin foil on the buccal surfaces would much improve the plate Dr. Green has written his paper on, because tin foil can always be nicely worked into the carvings of the wax, and you can use hard wax and get nice carvings, the plate comes out finished, and the time consumed in finishing the plate afterward can be saved in using tin foil.

Dr. F. N. BROWN: May I add a word or two, Mr. President, to my previous remarks? If you use tea lead and attempt to reproduce the rugæ, you magnify the rugæ every time you add a piece of tea lead. If you use ten or twelve pieces of tea lead each time you magnify or enlarge the rugæ until there are none. If you use a piece of wax, properly applied, you get a reproduction of the rugæ immediately.

Dr. L. H. ARNOLD: I have been using the process described by Dr. Green with the addition of foil for the lingual and buccal surfaces as described by Dr. Schwartz, and I can thoroughly recommend it. Do not use fifteen thicknesses; it would make the plate about half an inch thick. I generally use three thicknesses (occasionally four) of tea lead over my model; I have not used tin foil under the tea lead, fearing it would make a poor fit. We may begin earlier than Dr. Green does; I make the *trial plate* of the three thicknesses of tea lead, and find this stiff enough, with few exceptions. If it were made thicker, we would have a clumsy plate when finished that we could not use. The rugæ certainly become exaggerated by being covered, but it must be borne in

mind that after extraction of the teeth there is a general shrinking of the roof of the mouth—rugæ included. Therefore the enlarging of the shrunken rugæ is not a departure from original conditions. Carving done in the wax can be preserved with the exception of that at the gingival margin. If one carves *that* in wax, one cannot burnish the foil down unless one uses thin tin foil. If common wax is used, one can burnish the tea lead down nicely except there and with a chisel get the gingival margins after the piece is vulcanized.

The discolorations made by the lead are readily removed by a stiff brush wheel and wet pumice, except on pink vulcanite, where the felts may be needed.

Dr. E. J. PERRY: I want to add one suggestion. I have found tin foil can be taken off a rubber plate with mercury more effectually than in any other way. I notice the gentleman who read the paper stated that he used No. 10 tea lead, then peeled it off. Now, it may be he really does this sometimes, and sometimes he does not. I have a suspicion that some of the time he cannot do it. I would suggest that he use No. 20 or No. 30 tin foil on the face of the model. The plate which has been passed around is composed of three layers of tea lead, and it is abundantly thick. I would not think it wise to vulcanize one surface of the rubber, against the lead. My experience has been that the rubber is liable to become stained or darkened, and it becomes necessary to polish this surface, which we do not desire to do. A very clean, polished surface of tin is most desirable if you can get it even and smooth. The idea of vulcanizing between layers of metal is not at all a new one, and I do not know that the essayist claims that it is. Some of the members will recall the Stuck method that was in vogue some twenty years ago. It was considered an expensive, troublesome method, and was finally abandoned. This method is treated of in some of the older works on mechanical or prosthetic dentistry. There is no question but that the rubber vulcanized between a hard surface like metal is stronger and tougher, and a plate can be made of one-half the usual thickness, and it seems to me it pays to take pains to produce a plate in this way so as to be separated from the plate produced in the ordinary way, as in the cheap dental parlors.

I am glad this subject has risen to the dignity of a discussion. I am not above working rubber. I like to work it; it can be made

fascinating if a man takes interest in it. If you make a rubber plate in the proper way it need not be considered the dirty, filthy job that it is ordinarily said to be in most laboratories. This work should be undertaken with clean hands, and, if properly done, a reasonably good fee should be obtained for it. I am very glad the members of the society have considered the subject of sufficient importance to discuss it.

Dr. Charles F. Stewart: During the summer of 1888 a student at the Chicago College of Dental Surgery, whose home is in Galena, come to the country showing the country dentists this process, and we found that it made a very nice plate. We used tea lead throughout except where it came in contact with the rubber. We found, after two or three years' use of this method, that the ordinary black rubber was not strong enough, even with four thicknesses of tea lead, and we then got to using maroon rubber, and this was better, but still there were a great many cases with three or four thicknesses of tea lead.

Dr. B. J. Cigrand: I agree with Dr. Perry, that much can be done in rubber that will be a credit to the profession. It is not rubber that disgraces the profession so much as the men who carelessly work in it. A great deal in the way of improvement in dentures that have a vulcanite base lies in the fact that we have always forgotten the rugæ. I am very glad Dr. Green has observed that one fact. If we are to stand out as a scientific body of men who attempt to reproduce nature we must aim at perfection in every detail, and we have for many years overlooked the fact that the rugæ are entirely forgotten in the ordinary vulcanite plate, and I am glad that an effort is made by Dr. Green in his paper to have the rugæ reproduced. In those cases where the rugæ are not reproduced, the plate usually is very thin at the point corresponding to the elevation of the rugæ, and in scraping the case down we scrape through. This is particularly true in a full upper case, and if we reproduced the rugæ as we should the plate would be uniformly thick, having the dual advantage of being strong and approaching nature.

I want to add a word or two in reference to the term air chamber. One of the speakers referred to it as an air chamber. Technically speaking, it is not an air chamber, but a vacuum cavity. If it absolutely fits and answers its purpose, there should be no air in it. The essayist in presenting the model to the Society

shows the case with the air chamber, so-called. We have fallen into the habit of loosely naming things, so that it is hard to correct ourselves. I believe with Dr. L. P. Haskell, that these vacuums serve but a temporary purpose at best, and in a great measure destroy the esthetic appearance of the denture. A vacuum cavity in the shape of a star, or any of the other shapes we generally see in the palatal portion of dentures, is entirely useless, and I believe the vacuum cavity is unnecessary if we take impressions in plaster of Paris and round our cases properly. Perfect impressions and properly prepared models is all that is required.

I must add, in closing, that I believe this paper is a step in the right direction, and the essayist deserves great credit for presenting it.

Dr. D. M. CATTELL: I should like to ask if it is supposed for a moment that we get a *vacuum* there, and why such a space should be called a vacuum? Scientists seldom get one, dentists never in connection with a vulcanite plate. A relief chamber we have, but a vacuum certainly not.

With reference to the paper, I enjoyed it very much. I think the essayist meant to use the term lingual surface in one place where he said the "palatine surface." In polishing with whiting or chalk he spoke of the palatine surface of the plate, when I think he meant the lingual surface. At another place in his paper he used the word "rubber plate," when he doubtless meant vulcanite plate. We take rubber and do something with it, we harden it, and that process of hardening we call vulcanizing; therefore, after it has been hardened, it is known as *vulcanite*, not rubber.

Dr. A. W. HARLAN: The discussion on this subject brings to my mind some things that I thought I had forgotten. One of them is this: You will find in the edition of Harris' Principles and Practice for 1869, edited by Philip H. Austen, the best reasons for the nonuse of the so-called air chamber that have ever been put into the English language. You will also find in that edition directions for relieving soft parts in making a plate so that it will adapt itself to the roof of the mouth, if it is an upper plate, or to the ridges in the lower jaw. You will also find as early as 1855 some reference to the vulcanizing of rubber between metals, not in the manner spoken of by the essayist, which appears to me to be quite practical, but for the benefit of those who have not

looked into this question I would like to have them go back and see what was being done before most of the gentlemen in the room were born. I used to make a great many rubber plates in Chicago; I expect I have made a thousand or more, and I very early abandoned this practice of carving or cutting a so-called air chamber, because I found that the plates would set much better in the mouth and people were much better satisfied, and it was not until one of our own members devised a method of making perfect adaptation of vulcanized denture to the mouth that that was wholly overcome. Dr. W. V-B. Ames, of Chicago, was the first man to adapt a plate to the roof of the mouth and alveolar ridge so that it would become tight and relax itself with the movements of the muscles of the face, and there was no air chamber or vacuum chamber in it. I only wish to call your attention to these points in order to throw some light on the history of this thing. It is well known that I do not made any rubber plates myself at the present time; I have no interest in the subject whatever except such an interest as I would have in anything that tends to make better work in prosthesis, or in any other department of dental science. I wish to say, with reference to the paper of the essayist, that I am very glad he has read it. It does not matter much whether it takes three sheets or fifteen sheets of tea lead to make the thing right, the question is, will the method, as laid down, be of advantage to dentists who are making rubber plates, and if it is of advantage to them, it is a good thing for them to use.

Dr. J. E. Nyman: I want to call attention to one or two remarks made by Dr. Brown which I think he really ought to correct, when he gets his notes, otherwise I fear some one will criticise them sarcastically. If I understood him rightly, he said that burnishing in foil over the model made the model smaller, so that the plate will fit tighter when it is vulcanized. That is a mistake. The addition of any other material to the surface of the model will make the model much larger, and consequently the plate will be larger and will not fit the mouth so tightly as if there was no tin foil in here.

Another thing must be evident to you all, that base plate wax, whether it be the thickness of ten sheets of tea lead or three, will exaggerate the rugæ just as much.

Another point: It is not much of a trick to carve wax after all; it is not much of a trick to reproduce the rugæ. Any one who

has done much in porcelain work in trying to reproduce all natural things in either wax, porcelain, modeling compound, or even in plaster, can reproduce these rugæ. I do not do much in rubber plate work because I find I can spend my time in a more profitable way; but I think about the dirtiest thing we are called upon to do as dentists is to finish up rubber plates, and I would rather spend an extra half hour in handling tin foil and get rid of polishing rubber plates than to polish them after they came out in the ordinary way.

Dr. W. V-B. Ames was asked to take part in the discussion. He said: It was Dr. Warrington W. Evans who showed us a method years ago of manipulating celluloid between metal surfaces and about the same method I have adopted to some extent in working vulcanite, so that I can sanction nearly everything that has been said by the essayist. I do not know whether a plate of tea lead of the thickness which was passed around would be strong enough or not; it looks too thin.

Reference has been made to air chambers. The placing of a so-called air chamber for the production of a vacuum is wholly unscientific and is a relic of the past. You can cause the entire periphery of the plate to displace soft tissues and get maximum retention from the atmospheric pressure, from the tendency to the creation of a vacuum which is brought about by the attempt to displace the plate, or any pressure brought to displace the plate will tend to create a vacuum and the plate will not leave the mouth.

Dr. Nyman: I believe the plate is held up by capillary attraction alone.

Dr. E. J. Perry: Dr. Harlan spoke of a method of retaining plates. He touched on a subject which is of general interest; we are here for instruction and so long as the discussion has taken a wide range, I desire to refer to a certain point. It is this: Some years ago Dr. Ames exhibited before our State or local society a method of retaining a plate in position, and I would like to have him describe that method to-night and state what his experience has been with it during these many years of practice.

Dr. Ames was asked to explain the form of plate referred to by Dr. Harlan. He said: I am reminded by this discussion of vacuum cavities that a generation of dentists at least has come upon the scene since I took an active interest in the building of artificial dentures and was ambitious to be heard on the subject.

nd I am pained to find that in the construction of the entire den-
ıre so few seem to appreciate to what extent the pressure of the
tmosphere can be utilized in preventing their displacement.

The plate referred to was retained simply by the fact that the
ntire periphery came in contact with soft tissues and slightly dis-
laced them, preventing air from entering beneath the plate. The
late was continued well up under the lip, over the buccinator
uscles, outwardly around the tuberosities and just back of the
ard palate upon the flexible soft tissue, a groove of sufficient
epth being formed across the palate to cause the edge of the
late to slightly displace the soft tissue. Any attempt at biting upon
n incisor or cuspid, or any pressure upon those which would tend
o displace the plate and let the air in at the back tends to create
vacuum beneath the plate and the plate cannot leave the mouth.
ir cannot enter because the entire periphery of the plate dis-
laces soft tissues. The larger the mouth, the greater will be the
tmospheric pressure manifested. When there is no tendency
o displace the plate capillary attraction is sufficient for retention.

Dr. MENGES: What do you mean by capillary attraction?

Dr. AMES: If two moistened surfaces are brought together
ere is sufficient adhesion of the film of fluid to the surfaces to
old them together.

Dr. J. E. NYMAN: I think the only way we can get any assist-
ce from the so-called air chamber is due to the fact that in almost
ery mouth the palatal or lingual surface is the hardest spot. As
rule, the ridge, at almost all points, yields a little and if any
ief is afforded by means of an air chamber, why would not the
ess of mastication, exerted on one side of the plate, cause the
sue immediately beneath that point to yield a little? The
dian line of the palate is hard and acts as a fulcrum, and draws
s air in and the force of mastication is more powerful than the
ce of capillary attraction. It can be easily demonstrated that
re is no vacuum created there, because if you crowd the plate
a certain amount of air is locked in the air chamber, it cannot
out and where does it go? You have no vacuum unless you
ify the air in the chamber; you have the same amount of air.
ere may be a little compressed air.

In regard to capillary attraction, let us take those mouths in
ich there is a thick, stringy saliva—does a plate stick better in
h mouths than in those that secrete a thin saliva? Take a

plate, for instance, with an air chamber, sprinkle it with a little gum tragacanth and it will stick tighter than ever because the capillary attraction is greater. Some fluids have a greater capillary attraction than others. This is easily demonstrable. In a mouth which secretes a thick, stringy saliva, a plate will stick better than in one from which the flow of saliva is thin and there may not have been anything done to increase the air pressure or to create a vacuum in the plate. The advantage of an air chamber is to relieve pressure upon the hard parts, so that the plate may embed itself in the soft parts under the stress of mastication without rocking on the hard parts of the fulcrum.

Dr. Theodore Menges: My understanding of a plate being retained in the mouth is a little different from that of the last speaker. Here is an experiment that any one can try: Take two glass slabs; have them both dry; place a grain of sand on the lower one, and place them on top of each other, and you will have some adhesion. Take a trifle of moisture and put it between the two slabs and you can scarcely separate one slab from the other. The moisture has driven off the air and you get a closer contact. The same holds true with reference to the adhesion of plate. Relieve the hard parts of the mouth, the ridges, so that you have actual adaptation. This is the object which you wish to accomplish. What we call capillary attraction is really an actual adaptation of the parts to one another, the air being driven out by moisture and pressure upon the hard parts being relieved.

Dr. Green (closing discussion): I have very little to say in my closing remarks, but wish to state that this method is not original with me. When in California in 1888 I met an old dentist who hailed from the mountains and was then in Los Angeles, and he showed me this method of making a plate. I thought it a good thing, and have made a good many since, changing the method somewhat from time to time. If the plate is properly made and follows the lines indicated all the way through, it is one of the best that can be constructed, so far as rubber is concerned. While I am well pleased with most of the discussion, I am still wondering just what Dr. Brown did attempt to say in his remarks, and am sorry that he left so early. His reference to fifteen layers of tea lead so repeatedly leads me to conclude that he is not very familiar with tea lead. Perhaps he meant tin foil. I, for one, have far too much respect for my patients to put in their mouth

late as thick and cumbersome as fifteen layers of tea lead would ecessitate; and as tea lead from imported tea boxes, as I referred o, is all of a uniform gauge, I am quite positive that he has not sed much of it, as he must have learned differently. Three layers rdinarily, never more than five, is sufficient for the kind of plate hat I am in the habit of making. All the air chamber necessary s to relieve the hard parts. We must get perfect adaptation to ecure adhesion. So far as the labial and buccal portions are con- erned, they can be vulcanized between metal as well.

N. B. Tin foil is a mixture of tin and lead, while tea lead is hin sheet lead.

National Association of Dental Faculties.

The sixteenth annual session of the National Association of ental Faculties was held in Niagara Falls, commencing Friday. uly 28, 1899.

The following colleges were represented as noted :

Birmingham Dental College, Birmingham, Ala., T. M. Allen.

University of California, Dental Department, San Francisco, al., A. A. d'Ancona.

Colorado College of Dental Surgery, Denver, Colo., J. S. ackson.

University of Denver, Dental Department, Denver, Colo., A. . Sawins.

Columbian University, Dental Department, Washington, C., J. R. Hagan.

Howard University, Dental Department, Washington, D. C., J. Brown.

National University, Dental Department, Washington, D. C., D. Cobey.

Atlanta Dental College, Atlanta, Ga., H. R. Jewett.

Dental Department of Atlanta College of Physicians and rgeons, Atlanta, Ga., Frank Holland, S. W. Foster.

Chicago College of Dental Surgery, Chicago, Ill., Truman . Brophy.

Northwestern University Dental School, Chicago, Ill., Theo. enges.

Indiana Dental College, Indianapolis, Ind., George E. Hunt.

State University of Iowa, Dental Department, Iowa City, Iowa, . S. Hosford.

Louisville College of Dentistry, Louisville, Ky., H. B. Tiles ton.

Baltimore College of Dental Surgery, Baltimore, Md., M Whilldin Foster.

University of Maryland, Dental Department, Baltimore, Md. John C. Uhler.

Boston Dental College (Tufts College Dental School), Bos ton, Mass., Chas. P. Thayer.

Harvard University, Dental Department, Boston, Mass Thomas Fillebrown.

College of Dental Surgery of the University of Michigan, Ann Arbor, Mich., J. Taft, N. S. Hoff.

Detroit College of Medicine, Dental Department, Detroit Mich., G. S. Shattuck.

University of Minnesota, Dental Department, Minneapolis Minn., W. P. Dickinson.

Kansas City Dental College, Kansas City, Mo., J. D. Patter son.

Western Dental College, Kansas City, Mo., D. J. McMillen.

Marion-Sims College of Medicine, Dental Department, St Louis, Mo., J. H. Kennerly.

Missouri Dental College, St. Louis, Mo., A. H. Fuller.

University of Omaha, Dental Department, Omaha, Neb., A O. Hunt.

University of Buffalo, Dental Department, Buffalo, N. Y William C. Barrett, R. H. Hofheinz.

New York College of Dentistry, New York city, Faneuil I Weisse.

New York Dental School, New York City, John I. Hart, Rode ick M. Sanger.

Cincinnati College of Dental Surgery, Cincinnati, Ohio, G. Junkerman, W. T. McLean.

Ohio College of Dental Surgery, Cincinnati, Ohio, H. Smith.

Western Reserve University, Dental Department, Clevelan Ohio, H. L. Ambler.

Ohio Medical University, Dental Department, Columb Ohio, Otto Arnold.

Pennsylvania College of Dental Surgery, Philadelphia, P. Wilbur F. Litch.

Philadelphia Dental College, Philadelphia, Pa., S. H. Guil-
rd.

University of Pennsylvania, Dental Department, Philadelphia,
., James Truman, Edward C. Kirk.

Pittsburg Dental College, Pittsburg, Pa., Walter H. Funden-
rg.

School of Dentistry, Central Tennessee College, Nashville,
nn., G. W. Hubbard.

University of Tennessee, Dental Department, Nashville,
nn., L. G. Noel.

Vanderbilt University, Dental Department, Nashville, Tenn.,
nry W. Morgan.

Tacoma College of Dental Surgery (North Pacific Dental Col-
e), Portland, Ore., Geo. H. Chance.

Milwaukee Medical College, Dental Department, Milwaukee,
is., Geo. V. I. Brown.

Royal College of Dental Surgeons of Ontario, Toronto, Can.,
B. Willmott.

The treasurer reported that the Dental Department of Ten-
ssee Medical College, of Knoxville, Tenn., was no longer in ex-
ence, having been absorbed by another school.

The Tacoma College of Dental Surgery, having removed to
rtland, Ore., was given authority to change its name to North
cific Dental College.

The trustees of Boston Dental College accredited Dr. C. P.
yer as delegate to explain to the association that they had
sferred the institution, with all its appurtenances, to Tufts
ege, and to request that the Tufts College Dental School be
mitted to make application for membership at this meeting.
motion, it was ordered that Tufts College Dental School be
pted as a continuance of the old college, and that the change
name be approved.

The applications for membership of the following schools
ng been reported as regular by the executive committee, lie
r for one year for final action:

Medico-Chirurgical College of Philadelphia, Dental Depart-
t, Philadelphia, Pa.

Central College of Dentistry, Indianapolis, Ind.

College of Dentistry, University of Southern California, Los
eles, Cal.

Illinois School of Dentistry, Chicago, Ill.

Washington Dental College and Hospital of Oral Surger Washington, D. C.

Keokuk Medical College, Dental Department, Keokuk, Iow

The Committee on Text-Books reported recommending th the following be adopted: "Anatomy and Histology of t Mouth and Teeth," by I. N. Broomell, D. D. S.; "The Practi of Dental Medicine," by Geo. F. Eames, M. D., D. D. S.; Com parative Dental Anatomy," by A. H. Thompson, D. D. S. (recom mended last year in proof); "Methods of Filling Teeth," secon edition, by R. Ottolengui, M. D. S.

The committee had also examined "Chemistry and Metallur Applied to Dentistry," by Vernon J. Hall, Ph.D.; and while admi able, and containing many excellent features, the committee b lieved it unwise to recommend it as a text-book, inasmuch as the are already two excellent works on the same subject on the list.

Of "Interstitial Gingivitis, or so-called Pyorrhea Alveolari by Eugene S. Talbot, M.D., D.D.S., the committee reported that contained evidence of laudable and extensive research, but the su ject is still a matter of so much controversy and diversity of op ion as to make undesirable a text-book upon it at the present tim

The committee also suggested the removal of Clifford's "Ma ual of Recitations," adopted in 1892, and Burchard's "Compend Pathology," adopted in 1897.

The following resolutions, laid over under the rules from 18 were adopted:

Offered by Dr. Allen:

Resolved, That it is the sense of this association that the present method of stowing scholarships is no longer called for, and is detrimental to the best inte ts of the profession. and that hereafter no college of this association shall grant s free or benificiary scholarships not absolutely made obligatory in their charter

Offered by Dr. Barrett:

Resolved, That it shall be the duty of the secretary of this association to e sent at the opening of each annual session a list of the colleges, members of this ciation, who have been unrepresented for two years, that proper action ma e promptly taken.

The resolutions of Drs. Allen and d'Ancona concerning re attendance of students were substituted by the following, offe by Dr. Willmott, which was adopted:

Resolved, That students in attendance at colleges of this association, to o credit for full term, must be and remain in attendance until the close of the ses n

In accordance with this action, Rule 4 was amended to read as ollows:

4. In cases where a regularly matriculated student, on account of illness, finan- al conditions, or other sufficient cause, abandons his studies for a time, he may e-enter his college at the same or a subsequent session, or where, under similar rcumstances, he may desire to enter another college, then with the consent of oth deans he may be transferred.

Rule 9 was amended to read as follows:

ADMISSION OF UNDERGRADUATES TO MEDICINE.

9 Undergraduates of reputable medical colleges who have regularly com- leted one full scholastic year of a six months' term and passed a satisfactory xamination in the studies of the freshman year may be admitted to the junior rade in colleges of this association, subject to other rules governing admission to hat grade.

The Committee on Conference with the National Association f Dental Examiners reported, as the result of several conferences eld with a similar committee from the Examiners' Association, hat an agreement had been reached concerning the matters which ad been in controversy between the two associations for several ears. The report was adopted. [The basis of the agreement, ith some account of the difficulties referred to, will be found at ie end of this report.]

The following resolution was unanimously adopted:

Resolved, That the thanks of the National Association of Dental Faculties e due to the Chicago College of Dental Surgery for the courage and persistence th which it has maintained what we believe to be a correct principle, and that regard the placing as unrecognized and disreputable in the newspapers and erwise of one of the oldest and best of our professional teaching institutions injustice that demands complete rectification.

Dr. Barrett offered the following, which were adopted:

Resolved, That the commonly accepted code of ethics regulating the conduct practitioners in their relation with other practitioners be approved and made gatory upon the dental colleges of this association in their relations with other leges.

Resolved, That the section of the code which refers to public advertisements interpreted to forbid the advertising of the infirmaries of dental colleges in any nner that might be construed to be unprofessional if done by a practitioner

Resolved, That as dental colleges should in every practical manner impress importance of ethical conduct upon their students, and should themselves set ood example in this particular, their public advertisements should be confined a simple statement of the location of the schools, the date of opening and sing, with any other really essential facts, all details being reserved for the

annual announcement, which itself shall not violate the usually accepted ethic tone.

Dr. Taft offered the following:

Resolved, That a commission, consisting of three persons, be appointe whose duty it shall be to take cognizance of, investigate, and advise with a parties contemplating the establishment of a new college or the reorganization an old one.

In the performance of the duties of this commission it shall be competent take into consideration the following points, viz.:

The consideration of any proposed new dental college; taking into accou all the circumstances that attach to it; the motive that prompts such an organiz tion; the need for it; the proposed locality; the character and ability of tho who propose to conduct it; the sufficiency of the resources that may be availat for its establishment, and whether, on the part of the promoters, there is a ju appreciation of that which is required for such an institution.

The attainment of full knowledge on these points would enable the comm sion to advise wisely.

It would be the duty of this commission to report to this body at each ann meeting.

The resolution was adopted and it was ordered that the cor mission be elected with the other officers.

The following amendment to the constitution was adopted :

Change Article V. to read as follows :

Article V. The Executive Committee shall consist of five members, three whom shall be elected annually; the two receiving the higher number of vo shall hold office for two years each. The Executive Committee shall have pow to designate the time and place of meeting, make preparations for same a transact such other business as usually devolves upon such committee. That f members be elected this session, the two receiving the higher number of votes serve for two years, the other three for one year each.

On motion of the Executive Committee, it was ordered th colleges making application for membership in this body sh have present a copy of their annual announcement and that a d authenticated representative of the school be present at the me ing, without which the application shall not be considered.

It was decided that the change from six to seven montl terms, which goes into effect with the session of 1899-1900, sho apply to all students in colleges of the association, even though t students may have previously attended under the six months' ru

On motion of Dr. Barrett, it was ordered that a Committee Law, to consist of three members, be elected to serve as a stan ing committee, which shall be authorized to levy such assessmen upon the members of the association as may be necessary for t

payment of past legal expenses and such as may accrue in the future in the suppression of the issue of fraudulent diplomas. Such assessments to be lodged with the treasurer, and paid upon the order of the Committee on Law. It was also ordered that all legal matters which may arise in connection with the National Association of Dental Faculties shall be referred to this committee.

The Committee on Foreign Relations, in concluding the report of its work for the year, offered the following resolutions, which were adopted :

Resolved, That the Foreign Relations Committee be instructed to take any steps which they may deem advisable for putting an end to issuing of fraudulent and irregular degrees and to this end are authorized during the coming year to use any funds in the treasury of the association upon the approval of the Law Committee.

Resolved, That the European Advisory Board of the Foreign Relations Committee be and is hereby invited each year to send a delegation to attend the annual meeting of this association and that such delegation be accorded seats in the meetings of the association, with all the privileges of debate.

Resolved, That no student coming from Europe shall be received by any member of the association until his credentials shall have been approved by the members of the European Advisory Board for the country from which he claims to come.

Resolved, That the Committee on Foreign Relations be authorized to appoint Advisory Boards for countries outside of Europe, whenever in their judgment it is advisable to do so, and report any such action at the next succeeding meeting of this association.

Resolved, That the Foreign Relations Committee be given jurisdiction in all foreign American dental educational matters, subject always to the approval of the National Association of Dental Faculties, to which a full written report shall be submitted annually.

Following are the members of the European Advisory Board, so far as appointed :

Great Britain, Wm. Mitchell, W. E. Royce and B. J. Bonnell.

Holland and Belgium, J. E. Grevers, Ed. Rosenthal and C. van de Hoeven.

Denmark, Norway and Sweden, Elof Förberg.

Germany, W. D. Miller, C. F. W. Bödecker and — Hesse.

Italy and Greece, Albert T. Webb, Tullio Avanzi and A. V. Elliott.

France, J. H. Spaulding, I. B. Davenport and G. A. Roussel.

Spain and Portugal, R. H. Purtuondo, Florestan Aguilar and J. M. Thomas.

Switzerland and Turkey, L. C. Bryan, Theo. Frick and Paul Guye.

Japan, China and Corea, Louis Ottofy.

Australia and New Zealand, Alfred Burne.

The following resolution, offered last year, was again laid over for another year:

Offered by Dr. Hosford:

Resolved, That a four years' course in a reputable college leading to the degree of A. B., Ph. B., or B. S., or four years of biological work, be accepted as one year's credit to the colleges of this association, subject to other rules governing admission to second year grade.

Resolved, That students matriculating in both a collegiate and dental department of a university, having completed the work of the first year in dentistry during the four year collegiate course, may, on graduation with collegiate degree, be given full credit for one year in colleges of this association.

The following, offered by Dr. Foster, was referred to the Executive Committee, to be reported upon next year:

Resolved, That when a student fails in any part of the requirements for obtaining his final degree, such student must hold over till the next regular course during which time he may reënter and remove such conditions by completing his work, and can only apply for his degree at the close of term as announced in the catalogue of such school.

The following resolutions lie over under the rules till next year:

Offered by Dr. Barrett:

To change Rule 1 to read as follows:

PRELIMINARY EXAMINATION.

1. The following preliminary examination shall be required of students seeking admission to colleges of this association:

a. The minimum preliminary educational requirements of colleges of this association, after the session of 1901–1902, shall be a certificate of entrance into the third year of a high school, or its equivalent, the preliminary examination be placed in the hands of the State superintendent of public instruction.

b. Nothing in this rule shall be construed to interfere with colleges of this association that are able to maintain a higher standard of preliminary educati

Offered by Dr. Weisse:

Resolved, That Rules 8, 9 and 10 of the Code of Rules be rescinded, and the following be substituted therefor:

That advanced standing to the junior or senior classes of institutions of this association shall only be upon certificate of one or two sessions' attendance respectively, in an institution belonging to this association.

Offered by Dr. Truman:

Resolved, That members of this association violating the rules of this bo shall, upon conviction, be fined not less than one hundred dollars for each offen

or be subject to censure, suspension, or expulsion, at the pleasure of the association.

Offered by Dr. Barrett :

Resolved, That the Executive Committee be instructed that, except under what they shall decide to be unusual or extraordinary circumstances, and which in their report they shall detail to the association, they shall not report favorably any application for the admission of a new college in the following instances :

1. When there has not been actually secured and bought or leased for a term of not less than three years, and fitted up with all required equipments, a sufficiently commodious and convenient building, entirely adequate to the needs of not less than one hundred students. Such equipment shall include not only the laboratories, infirmaries, etc., with proper chairs, benches, and all apparatus required for complete practical dental instruction, but the rooms and fittings necessary for scientific training, with apparatus and equipments necessary for the proper teaching of bacteriology, histology, microscopy, chemistry, and such other scientific studies as should form a part of an advanced dental curriculum of study.

2. When the character and attainments of its faculty, which must already have been named, and a list of the members of which with the respective positions they are to occupy shall be embodied in the application presented, are not such as to give assurance that the school will be conducted in a manner to reflect credit upon the dental profession, and to insure complete and adequate instruction in all branches of a broad dental curriculum of study.

3 When the proposed dental college or department is evidently or unmistakably intended primarily for the purpose of sustaining or strengthening another existing institution with which it is to be allied.

4. When the city or town in which such college is to be located already contains a college, or colleges, for dental teaching, of acknowledged efficiency, liberal character and ethical standing, sufficient in their opinion for the promotion of the best interests of dentistry and the dental profession.

Offered by Dr. Guilford:

Resolved, That while examinations for progress should continue to be held annually upon the subjects taught during the year, no final examinations shall be held until the close of the third year.

Dr. Taft, from the Committee on Curriculum, submitted as the report of his committee the following :

SCHEDULE OF STUDIES.

FIRST YEAR.	Hrs. Per Wk.	SECOND YEAR.	Hrs. Per Wk.	THIRD YEAR.	Hrs Per Wk
Anatomy and Dissection	2	Anatomy, Regional.	1	Therapeutics	1
Physiology	2	" Comparative.	1	Pathology	1
Chemistry, Inorganic	2	Physiology	2	Surgery, General	1
Chemistry, Laboratory	4	Chemistry, Organic.	2	" Oral	1
Dental Anatomy	2	" Laboratory.	4	Jurisprudence	½
Prosthetic Technic.	10	Metallurgy, Didactic	1	Orthodontia, Didactic	1
Histology, Didactic } " Laboratory }	4	" Laboratory	2	" Practical	1
Materia Medica		Materia Medica	1	Operative Dentistry.	2
Comparative Anatomy		Operative Technic.	4	Prosthetic Dentistry.	2
		Bacteriology, Didactic	4	Electricity	
		Operative Dentistry, Didactic	2	Ethics	
		Orthodontia Technic.	1	History	
		Pathology	2		
		Orthodontia Didactic			

INFIRMARY.

Prosthetic Dentistry.	5	Prosthetic Dentistry.	6
Crown and Bridge Work	3	Operative Dentistry.	15
		Crown and Bridge Work	4

The following were elected officers for the ensuing year: Jonathan Taft, president; B. Holly Smith, vice-president; J. H. Kennerly, secretary; Henry W. Morgan, treasurer; S. W. Foster, J. B. Willmott, executive committee for two years; H. B. Tileston, Theo. Menges (chairman), S. H. Guilford, executive committee for one year; W. T. McLean, J. D. Patterson, W. S. Hosford, *ad interim* committee; Truman W. Brophy, Edward C. Kirk, Albert H. Fuller, commission on proposed new colleges; A. O. Hunt, Henry W. Morgan, W. C. Barrett, committee on law.

The newly elected president appointed the following committees: T. M. Allen, W. S. Hosford, W. P. Dickinson, G. S. Shattuck, J. G. Templeton, committee on schools; A. J. Brown, John I. Hart, Thomas E. Weeks, Edward C. Kirk, Thomas Fillebrown, committee on text-books; W. C. Barrett, J. D. Patterson, T. W. Brophy, S. H. Guilford, H. W. Morgan, committee on foreign relations; N. S. Hoff, G. V. I. Brown, committee to secure papers to be read at the next annual meeting; S. H. Guilford, W.

F. Litch, N. S. Hoff, A. H. Fuller, C. L. Goddard, committee on curriculum.

The Executive Committee reported that it had decided to adopt the suggestion of Dr. Willmott to convene the next meeting on the day of the adjournment of the National Dental Association, at the same place.

Adjourned to meet at Old Point Comfort, Friday, June 29, 1900.

An important fact in connection with the meeting of the National Association of Dental Faculties was the presence of three of the members of the European Advisory Board of the Committee on Foreign Relations: Drs. Lyman C. Bryan, of Basle, Switzerland; John E. Grevers, of Amsterdam, Netherlands; and William Mitchell, of London, England.

Dr. Grevers, in speaking of the reception to advanced standing of students from foreign countries, probably struck the keynote of the entire situation. He was impressed, he said, with the idea that the foreigner comes to this country to study dentistry for one of two reasons: First, as a graduate, or as one having fulfilled the requirements in his own country, who desires to still further develop his manipulative ability by the acquirement of American methods; or, second, because he cannot fulfill the requirements in his own country, and hopes to secure something here which will enable him to return home and practice. So that if the applicant from a European country is not supplied with the proper certificates the colleges should be cautious about receiving him to advanced standing.

The proceedings of the late meeting were varied by two pleasant, albeit unusual, incidents.

The first of these was a trolley ride of the members of the Association and their friends to Buffalo, twenty-five miles away, and return, as the guests of the Dental Department of the University of Buffalo. Arrived at Buffalo they were taken to the college building, where an ample collation was served, accompanied by several felicitous speeches. The various departments of the college were then inspected and pronounced good, after which the party again boarded the trolley cars and were taken to view the grounds where the Pan-American Exposition is to be held two years hence. Then came the return to Niagara Falls, which was accomplished without incident and without fatigue, every one expressing his gratification over the outing.

The second was of the same nature, but involved a visit to a foreign land. The Royal College of Dental Surgeons, of Ontario, invited the members of the Faculties' Association, and also those of the National Association of Dental Examiners, to visit the college and view the city of Toronto. In response about seventy-five persons took the train at Niagara Falls for Lewiston, where they boarded the steamer for the journey across Lake Ontario to Toronto. Arrived here a short walk brought them to McConkey's where a fine collation was served and appropriately disposed of. Tallyhos and carriages then conveyed the party to various points of interest in the city, among others Parliament House, where they alighted and spent a short time admiring its beauty of architecture and internal arrangement and fittings. A short drive brought them to the Royal College of Dental Surgeons, of Ontario where they were assembled in the main lecture room, and speeches of felicitation and good will followed; after which the visitors circulated through the building, inspecting the equipment of the college and having explained to them the methods of instruction in various branches. It was the universal opinion that the school was admirably equipped for the systematic instruction of students of dentistry. The entrance to the college was tastefully draped with the flags of Great Britain and the United States. From the college the party proceeded to the Foresters' Temple Café, where a second collation was served; after which they were driven to the steamboat landing. As the vessel moved off three cheers for the Royal College of Surgeons were given with a will. The return journey was made without mishap, and the excursionists unanimously declared they had had one of the most delightful outings of their lives.

The members of the dental profession will be glad to learn that the differences existing for some years between the National Association of Dental Faculties and the National Association of Dental Examiners have been reconciled. These differences have been the cause of much friction between the two bodies.

The cause of the trouble was the refusal of the colleges to accept various rules which have crystallized into what is known as Rule 8 of the code of rules, Sections 1 and 2, of the Examiners' Association, because the colleges were not consulted in its framing.

The attempted enforcement of this rule recently led to litigation in the State of Wisconsin. The State Board of Dental Exam-

ners of that State refused to admit to registration the diplomas of the Chicago College of Dental Surgery, the Northwestern University Dental School, the Pennsylvania College of Dental Surgery, the Ohio Medical University Dental Department, the Philadelphia Dental College, and others, on the ground that they did not on their preliminary examination come up to the standard established by Rule 8, and demanded that graduates of these institutions presenting diplomas for registration should submit to examination by the board as to their qualifications to practice dentistry.

This contention of the board was resisted by a graduate of the Chicago College of Dental Surgery, who brought mandamus proceedings to compel the board to accept his diploma. The board moved to quash the proceedings, which motion was denied by the court, with leave to the board to file its answer. The answer was filed, and the case was in that condition at the time of the meeting of the two associations at Niagara Falls on the 28th of July, 1899.

With a view to the adjustment of the difficulty committees of conference were appointed by the two bodies, which, after going over the matters in dispute, agreed on the side of the National Association of Dental Examiners to recommend that Rule 8 be rescinded; that all colleges having membership in the National Association of Dental Faculties be placed upon the list of recognized schools, and that all litigation be withdrawn; and on the side of the National Association of Dental Faculties that a new rule governing the preliminary requirements for admission to the college courses should be adopted.

This action was ratified by the associations. The Examiners Association adopted a new Rule 8, Sections 1 and 2 of which read as below, the remainder of the rule being substantially as before:

Rule 8, new Sections 1 and 2:

"Section 1. Colleges desiring recommendation to the State boards by the National Association of Dental Examiners shall make application for such recommendation through the Committee on Colleges, on blanks provided for that purpose. This rule to apply only to schools making application to the National Association of Dental Examiners for recommendation and such schools as may be dropped.

"Section 2. The following preliminary examination shall be required of students seeking admission to colleges recommended by this association. The minimum preliminary educational re-

quirements of colleges of this association for the session of 1899-1900 shall be a certificate of entrance into the second year of a high school or its equivalent, the preliminary examination to be placed in the hands of the State superintendent of public instruction, as adopted by the State board of Missouri."

The Faculties' Association adopted the following rule governing the preliminary educational requirements of students:

"The minimum preliminary educational requirement of colleges of this association for the session of 1899-1900 shall be a certificate of entrance into the second year of a high school or its equivalent, the preliminary examination to be placed in the hands of the State superintendent of public instruction.

"Nothing in this rule shall be construed to interfere with colleges of this association that are able to maintain a higher standard of preliminary education."

The cause of friction being removed, the disputes which have arisen, there is every assurance, will be speedily adjusted and the two bodies will thereafter work in harmony.

International Dental Congress.

The committee appointed by the National Dental Association at the Omaha meeting August 30, 1898, was by order of the chairman, Dr. A. W. Harlan, convened at the Cataract House Niagara Falls, August 1, 1899. No quorum being present, was adjourned to the 3d inst., at 4 P. M.

There were then present A. W. Harlan, of Chicago; H. A. Smith, Cincinnati; Thos. Fillebrown, Boston; T. E. Weeks, Minneapolis; J. D. Patterson, Kansas City; H. W. Morgan, Nashville; T. W. Brophy, Chicago; W. C. Barrett, Buffalo; W. W. Walker, New York City; W. E. Griswold, Denver, Colo.; B. Holly Smith, Baltimore; J. Taft, Cincinnati, Ohio.

The meeting was called to order by the chairman who gave a short address, stating the object, organization, etc., of the congress and the work necessary for the committee to accomplish in this country.

On motion of Dr. Weeks, W. E. Griswold was elected secretary.

On motion of Dr. Fillebrown, Dr. Wm. Jarvie, of Brooklyn, N. Y., was elected an additional member of the committee.

On motion of Dr. Smith, the chairman and secretary were instructed to confer with the National Association in regard to arranging an earlier meeting next year to accommodate those going abroad.

On motion of Dr. Weeks, H. S. Sutphen, of Newark, N. J., was made a member of this committee.

On motion of Dr. Barrett, a place on this committee was reserved for the president of the National Association in the year 1900 and the chairman was authorized to insert his name.

On motion of Dr. Brophy, Geo. H. Chance, of Portland, Ore., was made a member of this committee.

On motion of Dr. Barrett, a resolution requesting any member of this committee finding himself unable to go abroad to attend this congress shall at once resign and that the Executive Committee be empowered to fill the vacancy, was passed.

On motion of Dr. Smith, the chairman was requested to appoint a Transportation Committee composed of Dr. Jarvie, Dr. Walker, Dr. Harlan, and Dr. Griswold.

On motion, a committee consisting of Dr. Brophy, Dr. Weeks, Dr. Morgan, were appointed to take charge of the exhibit of American Educational Methods.

On motion, an Executive Committee of five were appointed consisting of Dr. A. W. Harlan, chairman, Dr. Barrett, Dr. Brophy, Dr. E. C. Kirk, and H. A. Smith.

On motion, the Executive Committee were empowered to fill vacancies.

On motion adjourned to meet at call of chairman.

W. E. GRISWOLD, *Sec.*

NOTE.—It is expected that about fifteen to twenty papers will be read by residents of the United States and as many demonstrations (clinics) will be given by Americans.

NATIONAL DENTAL ASSOCIATION—SECTIONAL OFFICERS.

Sec 1. Prosthetic Dentistry, Crown and Bridge Work, Metallurgy, Chemistry and Orthondontia. V. H. Jackson, chairman; W. E. Walker, secretary.

Sec. 2. Dental Education, Literature, Nomenclature, Histology and Microscopy. S. H. Guilford, chairman; M. F. Finley, secretary.

Sec. 3. Operative Dentistry, Materia Medica and Therapeutics. J. Y. Crawford, chairman; Frank Holland, secretary.

Sec. 4. Physiology, Etiology, Hygiene and Prophylaxis. J. D. Patterson, chairman; L. E. Custer, secretary.

Sec. 5. Anatomy, Pathology and Surgery. W. C. Barrett, chairman; M. L. Rhein, secretary.

Sec 6. Clinics. H. J. McKellops, chairman; M. B. Culver, secretary.

Under the amended constitution, the above take the place of the former ten sections.

GEO. H. CUSHING, *Rec. Sec.*

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITOR: A. E. MOREY, PH. B., D. D. S.

THE NATIONAL ASSOCIATION OF DENTAL FACULTIES AND THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The principal interest of many members of the Nationa Dental Association this year centered in the meeting of the colleg men. A considerable proportion of the older members of ou national professional association are connected with our schoo as teachers. Every dentist has a vital interest in the colleges Practically, all of them owe their position as professional men t the fact that they hold the diploma of some one of our schools They obtained their training and instruction at the hands of th men who are teachers. Every one who hereafter shall enter th profession must do so by the college door, and hence dentistry t a considerable degree is what these men make it. It is no wond that their action has a national professional significance.

American dental schools have earned a great reputation f practical instruction, and students from foreign lands have alwa since the first dental college was opened in Baltimore, sought th precincts for instruction in the technique of practice. Their e ciency in teaching has never been questioned. But it has be urged with truth that as a whole they were not sufficiently care in the selection of the material out of which they were to ma dentists. Illiterate and undisciplined students were accepted a graduated into what was claimed to be a learned profession, a this was a professional scandal. Foreign students were forme received and graduated at the end of a short term, and this w urged against the schools. Although the time was none too lo it has also been the fact that in some instances students w received late, and thus given insufficient instruction. It was charg against them that they graduated unqualified men, and that

great a number were being launched into professional life, and that thus our ranks were becoming overcrowded.

All these considerations have created a prejudice against our colleges in the minds of many, and exaggerated and uncontradicted stories were set afloat by those who did not realize that the reputation of the schools involved that of the profession; that the alma mater of professional men, their fostering mother, could not be proven a sodden strumpet without demonstrating their own illegitimacy. But these shortcomings of some of the colleges, and the ambitions of men who had attained professional eminence, in many cases without having had the benefit of a college training, together with a genuine desire to keep a check upon the actions of the school, resulted in the passing of State laws, placing the government of dentistry in the hands of men not directly connected with educational affairs. These men naturally felt that they should have entire control, while it was well known that in some instances the State boards included dentists who were either seeking personal ends, or were incompetent to discharge their duties intelligently, and thus there has gradually grown up a feeling of antagonism toward the schools which has been aggravated by interested persons in every conceivable way.

The better part of the college men recognized the evil tendencies in certain directions. They knew that irresponsible schools were in some instances debasing the educational standard, and that the future welfare of both profession and schools demanded that some restraining and governing influence should be exercised. To this end a college association was formed, which necessarily included every respectable school. There was great difficulty in inducing some of the colleges to join it and submit to its discipline. It was impossible to adopt an arbitrary standard that should be high enough to satisfy the better colleges, because if this were done the very ones which most needed the restraining regulations would refuse to enter the association.

But through judicious concessions and wise counsels in due process of time all were included, and the authority of this body is acknowledged. The task which was before it was gradually to raise the tone of educational matter until the proper point was reached. It was desired to adopt a minimum standard of preliminary education, and every really intelligent teacher recognized the absolute necessity for this. But they also saw that it would

be worse than idle to adopt such a standard, and to attempt to make it obligatory upon the schools, until the authority of the National Faculties' Association was fully established. So the wisest of the teachers set about the latter task first. They drew the associational lines yet more strictly; they provided a definite length of term, and that students entering late should not be credited with the full term. They made it the law of the association that every school should have full facilities for not only technic and strictly professional instruction, but that they should have fully equipped scientific laboratories and teaching as well. As membership became more and more essential to respectable standing and professional recognition, they made that membership harder to secure by increasing the instructional requirements and demanding better and yet better equipments.

The matter of disciplining schools for infractions of the association regulations was approached with a great deal of caution for if it were demonstrated that the national body had not the power to enforce its edicts, all that had been accomplished would go for nothing. It was initiated by calling colleges to account for evasions of rules which would work injury to other schools. The offending college at once recognized the justice of the complaints and that if it would itself be protected in turn, it must without protest submit to discipline for any infractions it had been guilty of. In this way, by the exercise of great forbearance when necessary, and through the wisest discretion on the part of the officers the National Association of Dental Faculties has become sufficiently strong to command obedience on the part of its members to the voice of the majority. Within the past two years it has ventured to take up matters that are of yet more vital importance Having established and made imperative a curriculum that is sufficiently broad, having fully demonstrated its authority in intercollegiate matters, it was ready to take up the affairs which it was not at the outset powerful enough to dominate as it would. Accordingly, two years ago, it took steps to stop the reception of incompetent and unqualified foreign students. The schools had not been altogether to blame for the abuses in this direction. Students presented certificates which purported to represent one more terms in foreign dental schools. These were in a foreign tongue, and the dean was unable perhaps precisely to determine their value. The student presented a plausible story, and pe

haps letters from well-known men to substantiate his statement. He was given the benefit of the doubt, if any were manifest, and was accepted.

All this, by the action of the Faculties' Association, has been remedied. A Foreign Relations Committee has been given full power to decide in such instances, and by authority of the association has appointed for each country in Europe an Advisory Board, made up of the very best men whose coöperation it was possible to secure, without whose approval no certificate from any foreign student can be accepted by any college of the association.

The matter of preliminary qualifications has been the most vexing of all that have been presented. The members of the association know but too well the obstacles in the way of at once adopting a high standard, which to the practitioners are unknown. If the standard of general intelligence were the same in all the States, there would be no difficulties in the way. But some of our schools exist in States populated chiefly by foreigners who are not educated. Arbitrarily to raise the standard without warning, means to all such schools a choice between utter ruin, and going outside the association and becoming irregular and unrecognized colleges, in which latter case they would fall into the hands of unprincipled men and join the ranks of the diploma venders. Either of these results would be most deplorable. If a little time could be given such colleges to adapt themselves to a new order of things, they could remain regular and could become useful institutions. Surely, any one with an average amount of professional common sense would comprehend the necessity and advisability of approaching the subject cautiously.

Accordingly the first thing that was done two years ago, was to establish a standard and bring every school to the acceptance of it; then a year ago this was raised, with the distinct understanding that just as soon as it was firmly established and the schools had all adapted themselves to it, another raise would be made, and every college by its vote fully endorsed this policy. It was only stipulated that the raise should not be precipitate, or without giving sufficient time to prepare for it. This year another step was taken, and a most important one, in removing the power of determining preliminary qualifications from the hands of the dean and entrusting it to unbiased educators not connected with dental colleges. At the same time notice was given, by a resolu-

tion introduced, that at a definite time the preliminary qualifications would be raised one more year of high school examination. Hence it may be seen that under the government of their national association our dental colleges have made wonderful advances and that full assurance and even security is given, that within a reasonable time, as short a one as is possible under the circumstances, they will have attained all that any reasonable man could wish. They only require the moral support of members of the profession, for, strange to say, the chief obstacle in the way of advancement has been the vicious attacks of members of the profession who have paid no attention whatever to the admittedly fraudulent schools outside the Faculties' Association and directed their warfare exclusively against those which are striving their best to raise the standard.

The National Association of State Dental Examining Boards which was the result of the low standard and status in educational and professional matters, has adopted a difficult policy. Their avowed aim was the same as that of the Faculties' Association. But they made the mistake at the outset of antagonizing instead of coöperating with the faculties. They openly expressed distrust of the colleges, and their most influential members publicly declared their belief that the association of the schools was not acting in good faith. They became more and more aggressive and finally assumed to dictate to the colleges in matters of internal discipline. Of course this could only arouse resistance, because no men or aggregation of men can admit of government by a body in which it has no representation—domination by a foreign and antagonistic body. Special laws were passed in certain States, which bound the colleges hand and foot and handed them over to the tender mercies of boards admittedly antagonistic to them. This was justified under the rather selfish and ungenerous plea that the profession was becoming uncomfortably crowded; that there were too many dentists already; that the colleges were flooding the country with new graduates and spoiling practice entirely and so the trade union methods of restricting the number of those who should enter practice must be resorted to; all this in face of the known fact that the only thing which prevents the flooding of the country by a horde of unqualified men, is the diploma of the colleges—that the college qualification is the only barrier which it is possible to erect against ignorance and quackery.

There was no possible refuge for the schools against legislation admittedly hostile to them, but in an appeal to the law and when the diplomas of some of the oldest and best colleges in the land were denied recognition because they refused to accept the entire domination of the State board, suits of mandamus were brought, and the schools and boards entered upon a course of warfare which could only end in personal and professional animosities that would certainly be fatal, not only to that which each side desired to secure, but to all professional advancement and harmony for many years to come. There is no questioning this fact that the list of the teachers include the names of many of the best and strongest members of the profession and they cannot be branded as dishonest and unprofessional without the engendering of such feeling as will rend dentistry into warring factions. The schools charged that the board stood in the way, and were blocking progress by their factional activity; that they were determined to rule or ruin; that they had on more than one occasion induced such a feeling of antagonism as had made nugatory the attempts to raise the standard in the Faculties' Association; and that by going outside their legitimate sphere and assuming functions that belonged to the Faculties, they were antagonistic to the best interests of the profession.

The Examiners' Association declared that the Faculties could not be trusted; that the schools were actuated by motives of greed and avarice; that they did not care to advance the standard and would not do so if they were not compelled to do it at once through the action of the boards; that the latter were using a perfectly legitimate weapon in refusing recognition to schools which did not at once and without any delay accept the standard provided for them. Although in every case in which such extreme laws had been submitted to the courts for enforcement they had been pronounced nugatory, they believed the exigencies of the case warranted them in pushing the cases through to the court of last resort and fighting the matter to the bitter end.

Such was the condition when the two bodies met at the same time at Niagara. The Faculties by unanimous vote made common cause with the colleges which had been attacked and assumed all expenses of any suits, but at the same time depreciated such litigation and declared they simply defended their own integrity. The Examiners met and after heated debate asked the Faculties Asso-

ciation for a committee of conference, to meet with a like com mittee from their body. Accordingly the Faculties authorized a former committee to meet with the Examiners' committee and a compromise was agreed upon which, if it can be carried out, wil do more to advance the cause of education than anything that ha been accomplished for a long time. The substance of it is :

All litigation shall at once cease, and every effort to heal any breaches shall be made. The Board of Examiners rescinds its obnoxious Rule VIII., and accepts in its place the standard adopted by the Faculties' Association, with the distinct understand ing that this will be, as quickly as circumstances will allow advanced one full high school year, and that further high schoo work shall be added as soon as practicable. The determination o the preliminary qualifications is to be taken out of the hands o the deans of the schools and vested in the head of the schoo system of the State. All the colleges that are members of th Faculties' Association are to be placed on the recognized list o all the State boards. Henceforth the Faculties and the board are to work together.

It will be seen that this agreement secures one point whic was desired by many in the Faculties' Association, but which non knew how to bring about ; that is the removal of the determinatio of preliminary qualifications from the college itself, and placing it i the hands of a responsible and unbiased authority. That of itse is the longest stride yet made, for so long as any dean was pe mitted to determine the status of the proposed student, and accept equivalents, no unwavering and exact standard could maintained. It is a most happy settlement of a long vexed que tion, and is most distinctly in the interests of both the schools a the profession. If its terms are observed by both parties, it w mark such a step in advance as will assure us a standard in educ tional affairs such as all professional men must desire.

If either body fails to keep the agreement, it will earn t execration of every true and honest man, for it will demonstra unmistakably, either that the offending body was not sincere a honest, and desired to compass unworthy and personal ends rath than the best good of the profession, or that it had not enough coherence and strength to compel obedience on the part of members, and hence that all claims to "nationality" in the ch acter, and attempts by concerted action of bodies not acting

oncert to dominate in either school or examination policy, is on heir part but a pretence and an abominable farce. O. M.

International Dental Congress.

As much of the preliminary work of the congress has already een done, we publish this circular for general information, requesting other journals to copy, if they have not already translated and ublished it.

Arrangements are being made to get transportation for some ime early in July, between the 10th and 21st, so that those who ay wish to attend both congresses, medical and dental, will be in me for the congresses or for sight seeing.

About twenty clinicians may be utilized in Paris and not ore than fifteen essays.

RÉPUBLIQUE FRANÇAISE.

MINISTÈRE DU COMMERCE, DE L'INDUSTRIE, DES POSTES DES TÉLÉGRAPHES

EXPOSITION UNIVERSELLE DE 1900.

DIRECTION GÉNÉRALE DE L'EXPLOITATION.

CONGRÈS INTERNATIONAUX.

Paris, le 30 juin 1899.

CONGRÈS DENTAIRE INTERNATIONAL DE PARIS.

(8–14 AUGUST 1900).

THE DENTISTS OF THE UNITED STATES :

As you will see by extract of rules herewith, an International Dental Conss is to be held in Paris from August 8 to 14, 1900, under the patronage of French government.

This congress, organized by national dental societies, will continue the tom so happily inaugurated by the International Congress at Paris in 1889 in Chicago in 1893, and is one of the official congresses to be held during exposition.

It is needless to call your attention to the importance of this great proional reunion, to which belong the principal dental societies of the entire wld.

We are already assured of a great interest of this new congress by the ortant number of demonstrations and lectures which have been announced n all sides, by the variety of the subjects to be discussed in the different ions, by the value of the reports to be discussed in general assembly, rts dealing with subjects of present interest in our profession, and finally

by the standing of the professional men from all countries who will take pa in the discussions.

The record of the proceedings which will be sent to each member w constitute a veritable compendium of the state of our special science at t close of the nineteenth century, and a volume in which every dentist in t world will wish to see his name.

Therefore, we have the honor to solicit for this congress your membe ship and coöperation.

Please accept the assurance of our fraternal sentiments.

COMMITTEE OF ORGANIZATION.

EXTRACT FROM RULES.

Article 2. The cost of admission to the congress is fixed at fc. 2 Members will have right to all the advantages of official members.

Article 5. Members of the congress who wish to read a paper are aske to advise the secretary three months before the opening of the congres They must join to their notice the title of their paper and the results of the work. The committee will translate these results into French.

Article 6 The congress will be divided into several sections: 1. Ana omy, physiology and histology. 2. Special pathology and bacteriology. Operative dentistry and special therapy. 4. Anesthesia, general and loc 5. Prosthetic, dental orthopedics and facial restitutions. 6. Instruction a dental history. 7. Legislation, jurisprudence, odontology. 8. Hygiene, pub dental service.

Article 7. The work of the congress will comprise: 1. Communicatio of two kinds. (*a*) Those proposed in advance by the commission and intend to form the subject of reports. (*b*) Those chosen at liberty.

The communications will be in French, English, German, Russian, It ian, or Spanish. The conclusions must be in French. 2. Practical dem strations (operations, prosthetics, and presentation of new instruments).

Article 13. To be a member it is necessary: 1. To have legal right practice in place of residence. 2. To be honorably following the profess that is to say without advertising or doing anything contrary to professio dignity. 3. To be endorsed by the National Bureau of the resident coun if one exists, or by the Committee of Organization.

Article 14. Persons not following dentistry can be admitted by spe request to the Bureau of the Committee of Organization.

Address all applications, correspondence, etc., to Dr. E. Sauvez, 17 F St. Petersburg, Paris. Send subscriptions to M. Viau, Treasurer. 47 B Haussmann, Paris.

COMMISSION D'ORGANISATION.

Président d'Honneur: M. Lecaudey (Em.), Honorary President of e Society of the Dental School and Dispensary of Paris and of the Gen l Association of Dentists of France.

Président: M. Godon (Ch.), President and Manager of the Societ of the Dental School and Dispensary of Paris.

Vice Présidents: MM. Damain (Ed.), Directeur de l'École Odontot

que ; Ducournau, Président l'Association de l'École Odontotechnique ; neudot (le Dr.), Président de la Société Odontologique de France ; Ronnet, ésident du Syndicat des Chirurgiens-dentistes de France ; Martin (le Dr.), résident de l'Association des Dentistes du Rhône et de la région ; Schwartz re, Président de l'Association Générale des Dentistes du Sud-Est.

Trésorier : M. Viau (G.), Professeur à l'École Dentaire de Paris.

Secrétaire Générale : M. Sauvez (le Dr.), Professeur à l'École Dentaire de aris.

Secrétaires : MM. Burt, Professeur à l'École Odontotechnique ; d'Argent, ésident de l'Association Générale des Dentistes de France ; Hivert, Pro-sseur à l'École Odontotechnique ; Maire (le Dr.), Chef de Clinique à l'École ntaire de Paris ; Martinier, Directeur Adjoint de l'École Dentaire de Paris; ffre, Professeur Suppléant à l'École Odontotechnique.

Trésorier Adjoint : M. Rodolphe, Chef de Clinique à l'École Odonto-chnique.

LISTE DES SOCIÉTÉS FRANÇAISES ADHÉRENTES.

Société de l'École et du Dispensaire dentaires de Paris.
Société d'odontologie de Paris.
Association générale des dentistes de France.
Syndicat des chirurgiens-dentistes de France.
American Dental Club of Paris.
Association des dentistes du Nord-Ouest de la France.
Association générale des dentistes du Rhône et de la région.
Société de l'École odontotechnique de France.
Société odontologique de France.
Association odontotechnique de France.
Syndicat des chirurgiens-dentistes patentés avant 1892 ou diplômés uis.
Association générale des dentistes du Sud-Est de la France.
Société des dentistes du Sud-Ouest.
Syndicat des dentistes du Nord et du Pas-de-Calais.

International Dental Congress, Paris, 1900.

RULES AND REGULATIONS.

Rules adopted by the Committee of Organization at the neral Assembly of April 12, 1899.

Article 1. An International Dental Congress, under the ronage of the French government, will be held in Paris in 0, from the 8th to 14th of August inclusive.

Article 2. Right of admission to the congress is fixed at f. 25. mbers of the congress will have right to all advantages of offi-l members.

Article 3. Applications for admission must be addressed to

the general secretary, the cost of membership to the treasure (The committee asks those who desire to take part in the congre to send their subscriptions as soon as possible.)

Article 4. The reunions will be held: (*a*) For opening a closing, in one of the halls of the Palace of Congresses of t exposition. (*b*) For ordinary meetings, in the halls of the dent societies, 45 Rue de la Tour d'Auvergne and 3 Rue de l'Abbay (*c*) For demonstrations, in the operating rooms of the Den School of Paris and the Odontotechnic School.

Article 5. Members wishing to read papers are asked advise the general secretary three months before the opening the congress, joining to this notice text of their paper, containi results of their work. These results the committee will transl into French.

To aid in discussing, each paper will be printed in the volu to be distributed to the members one month before the openin providing the paper reaches the society three months ahead a was reported by the commission.

Article 6. The congress will be divided into several section 1. Anatomy, physiology, histology. 2. Special pathology a bacteriology. 3. Operative dentistry and special therapy. Anesthesia, general and local. 5. Prosthetics, dental orthoped and facial restitutions. 6. Instruction and dental history. Legislation, jurisprudence and odontology. 8. Hygiene, pub dental service.

Article 7. Work of the congress will comprise: 1. Co munications; of two kinds. (*a*) Subjects proposed in advance the committee and to be the objects of reports. (*b*) Those cho at liberty. Communications (papers) will be in French, Engli German, Russian, Spanish and Italian. Results must be in Fren 2. Practical demonstrations (operative and prosthetic dentis and presentation of new instruments).

Article 8. Work will be divided as follows: 1. From 9 12, practical demonstrations. 2. From 1:30 to 3, general asse blies. Program to be fixed by commission.

In the general assemblies will be read and discussed the s jects chosen by the commission as well as all things of gen interest. 3. From 3 to 6, work of sections.

Article 9. The reviewing of papers shall take fifteen min s for each. The president has a right to grant five minutes prolon

on without consulting the meeting. Over this time the assembly ust be consulted.

Article 10. Each speaker shall have five minutes for discus- on and ten minutes with the president's consent. The same eaker shall not talk more than ten minutes during a discussion d at the same sitting, without consent of the assembly. Those shing to discuss papers can have their names listed in advance writing to the secretary.

Article 11. All papers that are published otherwise than rough the congress, with the author's consent, in less than three nths after closing of the congress, will figure only by name in e reports.

Article 12. All correspondence relating to the congress, quests for admission, names of subjects, manuscripts, printed ms, etc., must be addressed to the secretary.

Article 13. To be a member it is necessary: 1. To have al right to practice in country of residence. 2. Honorably fol- v the profession, that is, without advertising, or other act con- ry to professional dignity. 3. To be accepted by the National mmittee of his own country, if one exists, or by the Committee Organization.

Article 14. Persons not practicing dentistry can be admitted special request to Committee of Organization.

NOTE.—Members wishing to make communications or demonstrations needing nstallation of material are asked to give in advance all particulars, (room, tricity, gas, etc., etc.).

THE PARIS CONGRESS.

Blank forms of application for membership in the congress be had from any member of the committee whose names we lish again for the benefit of our readers. It is the intention of committee to make liberal arrangements for transportation, ls and boarding houses and also to have two or three of the rican residents in Paris to act as information dispensers or aux. A knowledge of French would be desirable to those are going to Paris, but it is not indispensable. From time ime the journals in this country will give all needed infor- on.

COMMITTEE OF THE NATIONAL DENTAL ASSOCIATION.

A. W. Harlan, chairman, 1000 Masonic Temple, Chicago, Il
W. E. Griswold, secretary, 401 Mack Blk., Denver, Colo.; Truma
W. Brophy, 126 State St., Chicago, Ill.; Thos. E. Weeks, 608
Nicollet Ave., Minneapolis, Minn.; L. L. Dunbar, 606 Sutter S
San Francisco, Cal.; C. L. Goddard, 406 Sutter St., San Francisc
Cal.; W. C. Barrett, 208 Franklin St., Buffalo, N. Y.; W. V
Walker, 58 W. Fiftieth St., N. Y.; Thos. Fillebrown, 157 Newbe
St., Boston, Mass.; James McManus, 32 Pratt St., Hartford, Conn
E. C. Kirk, University of Pennsylvania, Philadelphia, Pa.; Fran
Holland, 24½ Whitehall St., Atlanta, Ga.; J. D. Patterson, Keit
& Perry Bldg., Kansas City, Mo.; A. H. Fuller, S. E. cor. Eighth an
Locust Sts., St. Louis, Mo.; H. J. McKellops, 3548 Lindell Ave
St. Louis, Mo.; B. Holly Smith, 1007 Madison Ave., Baltimor
Md.; H. A. Smith, 116 Garfield Place, Cincinnati, Ohio; J. Ta
Elm and Shillito Sts., Cincinnati, Ohio; H. S. Sutphen, 24
Kinney St., Newark, N. J.; Geo. H. Chance, 809 Dekum Bldg
Portland, Ore.; Wm. Jarvie, 105 Clinton St., Brooklyn, N. Y.;
W. Morgan, 211 N. High St., Nashville, Tenn.

DOMESTIC CORRESPONDENCE.

Letter from New York.

New York, September, 1899.

During the early part of last month it was announced throu
the press throughout the country that certain "patents coveri
tooth crowns and bridge work were upheld by the United Sta
Circuit Court after a litigation which has been in progress sev
teen years." The information came while the National Associat
meeting was in progress at Niagara, and created quite a stir.
Crouse, of the Dental Protective Association, became a mu
sought man about that time and was kept busy answering qu
tions. He made the announcement that no member of
Protective Association had anything to fear from the Internatio
Tooth Crown Co., as the Protective Association were in a posit
to protect those whom they had labored so assiduously to free fr
litigation and from the exactions of Tooth Crown Co.

Dr. Crouse said that he was not surprised at the verdict, t
that he did not know the suit was going on, which seemed strai
talk to many.

The decision rendered by Judge Townsend, of the United tates Circuit Court, was against Dr. James Orr Kyle, and apparntly confirms the validity of patents held by the International ooth Crown Co. on certain well-known forms of tooth crowns and idges, which the Tooth Crown Co. have been endeavoring to revent the dental profession at large from constructing and eceiving fee for it.

Dr. L. T. Sheffield, of New York, is the president of the comany which has just won the suit. Although the patents expired veral years ago, the court confirms the right of the Tooth Crown o. to collect the annual license fee and all royalties on infringeents during the entire time during which the patents were in rce.

The Tooth Crown Co. have a big contract before them to certain who the infringers are, yet it is safe to say that fully ghty-five per cent of the dental profession have been infringers a greater or lesser extent in proportion to their ability both to nserve tooth structure and to conscientiously serve their patients, r it is an undoubted fact that a practice becomes more remunerae in proportion to the amount of bridge and crown work accomished.

The protection of the Protective Association to the masses will bably never be more fully exemplified than during this camgn of the Tooth Crown Co., for the war is on. The company med have sent circulars to most all dentists in New York, stating court's decision and their claims and practically demand $25 nual license fee and fifteen per cent of the cost of all operations, ich in the mind of the writer might establish further legal prodings if the Tooth Crown Co. contend that such "cost of all rations," implies the "cost" to the consumer instead of the ost" to the producer.

The decision gives the Tooth Crown Co. the right to demand accounting, which means that they can demand an examination he books of all practitioners or that part of them which relates operations performed during the life of the patents in question.

The Dental Protective Association have not been idle since decision against them. Dr. Crouse has sent postal cards and ulars presumably to every member of the profession in the ited States which sounds like the "last call to dinner" on a lman vestibuled train, which means that the dining car will be

switched off soon, so come in now if at all, or settle up with th Tooth Crown Co. on a seventy-five per cent basis, which is th offer they make those to whom the circular has been sent.

To the reader: The preceding pages in last month's issu and those which follow, must not be regarded as a report o the proceedings of the National Dental Association but merel a synopsis of (to the writer) many of the striking, brigh or original remarks or happenings. Naturally some good thing were missed through various reasons. There was not muc to provoke mirth throughout the proceedings, all seemed to b intent upon the "serious," but when a breach did occur, wit o "lapsus linguæ" was at once interpreted; there was merrimen but mirth was short-lived.

So much transpired in the four days of the convention, eac day of three sessions—morning, afternoon and evening—of abou three or more hours each that it would have been impracticable t do justice to even a synopsis if transmitted in such few words. is hoped that readers of THE DENTAL REVIEW who did not atten the National Association Convention and who will not receive copy of the proceedings will find in these pages enough to intere them and a few points of practical value.

THE BOROUGHS.

LETTER FROM NEW YORK.

NIAGARA FALLS, N. Y., August 6, 1899.

TO THE EDITOR OF DENTAL REVIEW.

Dear Sir:—A few remarks were made by Dr. Crawford a others in discussing Dr. Crouse's paper at the meeting of t National Association which should be appended to the notes giv you.

Dr. Crawford said that he believed caries has some of t elements of contagion. He has seen partial immunity and sees reason why absolute immunity should not be attained.

Dr. Kells, of New Orleans, had two exceptions to Dr. Crous paper: 1. He did not believe in packing amalgam too hard a 2, that the bulging spoken of, was due to imperfect finishing of t filling. The frail edges of amalgam subsequently fracture aw which gives the appearance to the filling of having bulged. Wh Dr. McKellops has anything to say relative to fillings, it is to t the younger members of the profession, that gold is the o

aterial. Again the doctor offers $1,000 to any one who can bring him a single filling of amalgam that he has inserted in the tooth any human being.

Dr. Barrett believes in the use of plastics more now than heretofore and uses them quite a great deal. Another gentleman who spoke said that that was a great admission of laziness on his part.

Dr. Crouse being called upon to close the discussion at the Wednesday morning session said, that after all gold was really the only material that saved teeth best.

It was announced that in the afternoon (Wednesday), Dr. Joseph Head, of Philadelphia, Dr. Jenkins, of Dresden, Dr. B. C. Russell, and possibly others, would perform clinics demonstrating their respective methods of producing porcelain inlays. There is no illuminating gas used in the International Hotel, so the clinicians adjourned to the Cataract House, which adjoins the former hotel, where gas is still on tap, and they were able to manipulate their furnaces.

Dr. Jenkins' system being with low fusing body, really requires much heat only as gas can give, being constructed for such.

Clinics are a new feature in the National Association. It is many years ago since the American Dental Association indulged them. As to the Southern Dental Association I have little knowledge, but believe from hearsay that the practical demonstration (clinic) was a rarity. However, upon this occasion it was a success, judging from attendance, and the hope was expressed that such demonstrations of selected processes might be incorporated as a feature in the other yearly meetings. Certainly, the practitioner who lives away from the centers where clinics are regular features, feels very much repaid for the journey if able to see a new feature in practice demonstrated as well as explained. The latter is conveyed to one's mind almost as well through the journals.

Wednesday evening Dr. Grevers, of Amsterdam, Holland, although not announced in the program, was permitted the floor. With the aid of a stereopticon he projected photographs of fills, etc., of different occlusal conditions, showing normal and abnormal bite. His object was mainly to explain by illustrations the different nomenclature of these conditions.

Dr. Grevers adopts the Greek roots as being the elementary

parts of words carrying the primitive significance with the
They really seem more applicable, as

Enarmosis—Normal bite, di-enarmosis, dys-enarmosis.

Epharmosis—Projection mandibulæ.

Prosarmosis—Edge to edge bite.

Opharmosis—Open bite.

Dicharmosis—Cross bite.

Odontharmosis—Occlusion of teeth.

During the session of Thursday morning, Dr. Ottolengui, New York, read his paper, "Prognathism: Extraction and Del versus Expansion and Early Attention," which was illustrated b charts, models and appliances.

A review of the cases was given which were completed in remarkably short time for such extensive work. The operatio were performed while a greater part of the deciduous teeth we still in the mouth, moving them, that the permanent teeth mig follow later and occupy their positions. In the second case t arch was expanded and the incisors drawn back.

Dr. Wedelstaedt, of Minneapolis, also read his paper entitl "Cements," in which was an attempt to prove by different m ings of cements, then placing in aniline solutions, that they all a porous to a greater or lesser degree.

Very large (criticised as unwieldy) masses of phosphate h been mixed and placed in glass tubes to harden. The use of su chunks of material was a serious error. Some of the specim glass tubes had varnish covering the cement at the ends, some h paraffine, some were left plain. They were all in bottles w aniline.

Dr. Johnson was requested to remove the specimens fr the aniline solution, dry, and break glass from the cement a report the findings.

a. Without varnish or paraffine showed considerable pe tration by aniline.

b. Treated with sandarac—penetrated partly.

c. Those covered with hot paraffine showed perceptible p etration by aniline.

Various manufactures of cements were used. Dr. John n said that from his examinations there was not a material am g them fit to use in the mouth.

Dr. W. V-B. Ames, of Chicago, then read his paper, "Sc e

hases of the Cement Question," which was very much better ceived than the preceding essayist's relative to the same subject. e spoke to some length on the phosphate powder (zinc phos.) glacial phosphoric acid and on the arsenical compounds which ter to some extent into the composition (or are not removed om) of most all phosphate cements.

He claimed that by proper preparation a cement can be pro red fairly reliable, hard, nonshrinking and impervious at least to iline stains.

In discussing the subject Dr. Black said that phosphates nerally were unreliable even for covering arsenical pulp treat-nts, as phosphates shrink enough to let the arsenic out.

Experiments are going on (evidently in his laboratory, too), d soon we may expect to hear of the "right thing" on the arket.

Dr. Wedelstaedt and Dr. Ames in closing the discussion on e question at issue both said that there is so much to be said at discussion had best be brought to a close.

"Susceptibility and Immunity to Dental Caries," was the title the following paper by Dr. G. V. Black, a gentleman who ds no introduction. His manner is always that of one quainted with his subject, but the doctor said this one could not properly elucidated now, although physical facts reduced to oratory demonstrations must remain.

In immunity or susceptibility to caries, the difference which sts is a clinical fact, but they have about them in the mouth all uncertainties. They show gelatinous formations which glue acid formations of microörganisms in contact with the teeth.

Gelatinous formations form from saliva, the true composition of ch is not known. Other microörganisms also form gelatinous ques.

Teeth themselves are the most unchanging, but the secretions he mouth possibly the most fluctuating in composition of any t of the human organism.

The doctor considers immunity due principally to heredity, to isposition, and to fluctuation of physical conditions, and that teeth of the generation growing up now *do not* decay as much he teeth of a generation ago, which he thinks is due to better hods of caring for them, the materials used, etc.

Particular stress was laid by Dr. Black and all others who

referred to the care of children's teeth in operating that the be care in operating is required and greatest judgment exercised, u to adult age when immunity is generally ushered in. There wa much disagreement between those who spoke as to whether pe manent fillings can generally be made for children. Dr. Blac contends that they can be, and clinically this supports the practice The only exceptions: The courage of a child should never b broken down by taxing its endurance.

One should never attempt permanent fillings where the phy cal conditions make the same impossible. The greatest of car should be used not to irritate the peridental membrane. Full, fre use of the teeth alone will accomplish the proper tone of th membrane. In other words, there should be no subsequent lam ness or thermal shocks.

Dr. Black asserted that there were periods of fluctuatio between susceptibility and immunity and that these conditions health do not create changes in tooth structure.

Local immunity: Under this caption the doctor pointed o that caries sometimes destroys teeth on one surface or one locali while the other teeth are immune at other points.

After the close of Dr. Black's paper Dr. C. N. Johnson, Chicago, read a paper on "Care of Children's Teeth," or stated by him as a correction, "management" of those teeth, th first part of which dealt with the temporary set. He, too, said th the work during the early years of a child should be palliativ done with the cements, gutta-perchas or amalgams, which we important in the order named for incisor fillings, and with am gams if molars are not too sensitive for proper preparation the cavity.

The doctor believes bridging space when interproximal ca ties of any size exist, and that exposed pulps in children's te should not be treated with arsenic under any circumstances. T necessities of any case never calls for such treatment. Instea treat with oil of cloves and phosphate powder (oxide of zin which will cause relief. The pulp is certain to die. When th become devitalized (or are found so) his treatment is to force cloves through fistulæ if they exist by using soft rubber as a co press applied in cavity. If this is not successful then treat ag with what he called the "best treatment," which was gutta-perc dissolved in eucalyptus oil. Why this was not recommended the first treatment, if it is the best, is a question.

The second part of Dr. Johnson's paper dealt with the management of permanent teeth in childhood. Caries of teeth, he said, had been called a disease of childhood. By all means the sixth year molars should be saved even to crowning them. Cement is a good thing to use on the occlusal surfaces even before they have entirely erupted. This may not be an elegant operation but is an effective one. His aim and the aim of an operation should be to keep amalgam out of a mouth, but gold should not be used blindly.

In the estimation of the doctor, the mesial surface of the first molars was the most important to be cared for. The patient should be instructed to call immediately upon loss of the temporary second molar. If there is a blemish upon the mesial surface of the first molar, it should be filled *permanently* then and with gold, removing *positively* all the decalcified substance.

When Dr. James Truman, of Philadelphia, read his paper he also corrected its title, calling it the "Reflexes of the Lower Molars." He said that medical men have not regarded the mouth at all in disease, and that the origin of all disease has been studied only during the past twenty-five years.

The eruption of all the teeth a source of reflex disturbance, the second molar, though, being the prime factor in the causes of such troubles. The serious time with these teeth is about the ninth year, when they are passing through the hard tissues, and the doctor cited cases of gravity in practice at this age where nervous reflexes have been relieved by lancing of tissues. The third molar is also a frequent cause of these reflex disturbances. This closed the morning session.

During the afternoon of Thursday, discussion was opened on Dr. Johnson's and Dr. Black's papers and was indulged in by Drs. Ofheinz, Jackson, of Michigan, S. B. Palmer, Corydon Palmer and others. Full discussion was postponed until the evening, that Dr. L. E. Custer, of Dayton, Ohio, might get his paper before the convention for discussion at a later time, the title of which was "Dental Electricity," and consisted principally of a history of and characters of expositions of the power in its various forms, also its uses.

Dr. Custer referred also to the different mechanisms and instruments for measuring electricity, saying that it can be measured as a mathematical science. No energy at our command has such

a wide range of usefulness or so easily regulated, that is so cleanly and economizing of space. After details of all the other forms of currents and their special uses he said the Edison current is by far the best, most constant and the most universally applicable.

Adjournment was called for immediately after the reading of this paper that all who desired might avail of the invitation offered by the Niagara Power Co., and the Carborundum Abrasive Co., to visit their respective plants. The former for generating electricity. Several trolley car loads of dentists were carried several miles up the river to the power house. There they found in operation immense machines that were generating 5,000 volts each of electrical energy, some of which is delivered to dentists in Buffalo and suburbs for their various uses.

The Carborundum people showed all through their factory, describing the various processes the charcoal, sand and sawdust must pass through before issued as the bona fide carborundum. The terrific heat of 7,000 degrees is used in fusing the material (which is supplied by the Niagara Power Co.), and is kept up for a week. Both exhibits were highly interesting and instructive, relating as they do to our daily requirements for practice.

Sincerely yours,

"THE BOROUGHS."

(To be continued.)

PRACTICAL NOTES.

TIN GOLD—SOME OBSERVATIONS UPON THE RESULTS OF ITS USE.

BY E. G. BETTY, D. D. S., CINCINNATI, OHIO.

In offering you these few lines, it is not so much my purpose to present a treatise as to suggest to your readers that those who have used tin and gold in combination for the past twelve or fifteen years will kindly keep their eyes open and forward to you their memoranda.

This is desirable for several reasons. Data is eminently necessary to the formation of any conclusion, this alone will explain itself. I was very much struck during the past two or three years upon cutting into tin gold fillings, to observe the different aspect presented. In several crown fillings in molars (introduced when

he patients were children), I found a tolerably hard crust, but upon puncturing with an excavator, I discovered the body of the fillings to consist of a blackish gray *powder*, very much like reduced iron in appearance. There was no indication of decay about these fillings at all. I merely supposed them to be dilapidated amalgams and sought their removal accordingly. What seemed to me the more remarkable is the fact that I had never noticed this powered condition in any instance save where a tin gold foundation bore a superstructure of gold and that, too, upon a proximate surface of bicuspid or molar, and both metals laved in the oral fluids. In simple crown cavities heretofore, my experience had been that the tin and gold could be separated and readily distinguished. In such cases the filling has been considerably worn away, the crown surface presenting a cupped condition. Nor could I trace the result of even the slightest chemical action; or, to admit a question, galvanic action. It either is or has been supposed, upon substantial grounds, that a certain action of some kind takes place where tin and gold in unison are presented to the fluids of the mouth. This action was also assumed to have or exert a "therapeutical effect" upon dentine, *i. e.*, render it aseptic and therefore unapproachable by the acids due to the activity of bacteria. It occurs to me that in this event where the component metals of the filling have been so completely disintegrated, those portions of tooth structure immediately in contact with the metals *have* been subjected to *some* such action and that, too, of a nature so violent and pronounced that no bacillus could thrive and reproduce itself in that vicinity. Now comes the most remarkable clinical feature of this tin gold affair. I have seen but one well marked instance in which the tin gold at the cervical border of a proximal bicuspid or molar filling gave way completely under the gold superstructure. It was completely reduced to this blackish powder and that, too, in the short space of three months. This is the only exception to what I call the rule, viz.: When the tin gold at the cervical border is covered with a heavy superstructure of gold, the tin gold changes its character as such, altogether and presents a very hard steel or bronzelike surface upon fracture. The surface of the tin gold which had been exposed to the fluids of the mouth (if you will permit me the use of this very convenient and liberal term) becomes exceedingly black but does not penetrate into the substance of the mass. Nor in instances such as this, have I ever

found any traces of decay at the cervical and lateral borders in immediate contact with the tin gold.

We have here then *two* separate and distinct conditions of the tin gold, in neither of which have I been able to trace a recurrence of decay. This naturally suggests the question, why? I cannot answer; can you?

If some of your readers can help us out with instances coming under their personal observation together with such suggestions as arise, such a multiplication of data becomes valuable. We may be able to solve what to me is an interesting problem. I should like to know what produces the powderlike disintegration of the tin gold in crown cavities without superstructure of gold above; what does the same in approximal cavities under superlayer of heavy gold; what causes the darkening on the surface of the tin gold in approximal cavities under gold top and finally by what process the tin gold under gold top in approximal fillings presents the steel or bronzelike surface when fractured.

MEMORANDA.

Protargol is an excellent silver salt.

Dr. A. H. Thompson, of Topeka, Kan., has removed to Philadelphia, Pa

Dr. B. G. Rees, of Louisville, Kentucky, was in Chicago during the month of August.

Dr. L. N. Seymour, of London, has been visiting in the United States recently.

The Boston Dental College has become the Dental Department of Tufts College.

The Illinois State Board of Dental Examiners will meet in Springfield, September 29.

Dr. Geo. W. Harris, formerly of Washington, D. C., is now located in Indianapolis, Ind.

Dr. G. Molyneaux, of Cincinnati, was in Chicago for a few days, the first part of September.

An evening dental college is about to be started in Chicago. Lectures in the evening and clinics all day.

The dental schools will make an educational exhibit at Paris in connection with the School of Technics.

Did you ever use fine silver and gold wire for ligating teeth? Always anneal these wires before using them.

Dr. Henry L. Banzhaf, of Manitowoc, Wis., has been appointed a member of the Wisconsin State Board of Dental Examiners.

The Tacoma College of Dental Surgery has been removed to Portland, Oregon, and has changed its name to the North Pacific Dental College.

Prof. Bunsen, the famous chemist, is dead at the age of eighty-nine He was the inventor of the Bunsen burner—invaluable to dentists and chemists.

Dr. B. D. Wikoff says: Distilled water may be used instead of absolute alcohol in mixing Jenkins' body for inlays. It is much better than alcohol.

NORTHERN ILLINOIS DENTAL SOCIETY.

The above society will meet in Elgin, October 18 and 19.

J. W. CORMANY, *Secretary.*

In buying Christmas books for children, remember that among the best is Dr. Newkirk's "Rhymes of the States," with prose descriptions. Illustrated by Harry Fenn, and published by the Century Co.

Dr. J. B. Mason, one of the teachers in the Chicago College of Dental Surgery, expects soon to reach Edmonton, which is close to civilization. He has been for the past year and a half in the Klondike.

On page 696 in the notice of the Paris Congress, the word "no" was dropped out in some unaccountable manner, making the meaning not what was intended There will be *no* clash between the Medical Congress meeting and the Dental Congress.

CAUGHT NAPPING.

On page 782 of the *British Journal of Dental Science*, for September 1, is a paper by Dr. B. H. Catching, of Atlanta, Ga., on "Gomphosis, A Barrier that Will Not be Swept Away," as having been read before the National Dental Association at Niagara Falls. This paper was on the program but it was not read. Wonder if our secretary sent it to London.

NORTHERN INDIANA DENTAL SOCIETY.

The following are the new officers of Northern Indiana Dental Society Dr. F. A. Goodwin, President, Warsaw; Dr. G. E. Johnson, Vice President, Fort Wayne; Dr. W. O. Vallette, Secretary-Treasurer, Goshen; Executive Committee, Dr. W. O. Vallette, Goshen, Dr. J. Stage, Goshen, Dr. M. A. Payne, Wabash. The place of meeting to be selected by Executive Committee.

You could hardly turn around at Niagara Falls. The meeting was held in a room that would seat about two hundred if it was crowded, and when three or four hundred gathered around there was not a breathing place. The noise was so great and all the peddlers and exhibits were in adjacent rooms. The noise was deafening They were always open, so the members could go from the meeting into the shop, and in spite of all this many papers were read—some very good ones.

THIRTEENTH INTERNATIONAL MEDICAL CONGRESS, PARIS, 2D TO 9TH OF AUGUST, 1900.

The thirteenth International Medical Congress will meet in Paris from the 2d to the 9th of August, 1900. This congress will have a section of stomatology to which shall be admitted all French and foreign doctors practicing this special branch. The officers of the Organizing Committee are President, Dr. Pietkewicz; Vice Presidents, Dr. Cruet, Dr. Gaillard; Secretary-General, Dr. Ferrier

N. B.—All communications or questions concerning this section should be addressed to the Secretary-General, Dr. Ferrier, 39, r Boissy-d'Anglas Paris

MATERNAL IMPRESSION.

To the St. Louis Medical and Dental College.

Gentlemen:—Please find top view of cephalic monster, born August 12, 1899, by Mrs. John Gawer. Mother and father both well developed, and full brain.

One month after conception, Carl Stephan, uncle to Mrs. Gawer, fell down the stairway, crushing the top of his head, December 17, 1898. When she was in her second month of gestation, the shock so impressed her that she saw the pic-



Maternal Impression.

ture of her uncle's skull always before her. When the child was born, August 12 1899, the entire top part of the head seemed to be missing, the child otherwise was fully developed and weighed eight pounds.

All of the face and the peculiar appearance of the child's head was so strikingly a likeness of the injured uncle's head that all the people who had seen the man with the crushed skull, and afterward saw the child's head, at once made connection between the two and called the case a typical caes of maternal impression. Yours truly, John D. Seba, M. D.

It appears that the litigation in Wisconsin is not settled. Last month we published a statement from Dr. J. H. Kennerly (see page 684) in which it appeared that the two associations had settled their difficulties, but now it seems that Wisconsin does not appear to be willing to abide by the results of the conference. As Wisconsin took the initiative in opening a fight on the colleges based on her adherence to a rule adopted in Washington last October, presumably following the wishes of the National Association of Examiners, it is hardly consistent to keep it up after an agreement was reached in which her own representative took a part. What is needed in Wisconsin at the present time is a little pondering over a matter which is of grave importance, wise counsel and no hasty determination to fight the matter out willy-nilly regardless of the result. We have looked upon the action of the Wisconsin board from the first as ill-advised and not in the interest of advanced education, and must still so consider it from these later developments. There is no question at issue since the agreement of the two associations, and we believe that the whole profession would be satisfied if the litigation were stopped. Smilax.

THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

Gold Bicuspid Crown with Porcelain Facing.*

By H. L. Cruttenden, D. D. S., Northfield, Minn.

It is my purpose to give you my method of making a porce-in faced bicuspid crown, which I consider preferable to use on uperior first bicuspids in place of the all-gold "shiners" we often e and upon second bicuspids when required. My method, ough original is not new, as I have made them for fourteen ears, and during that time I have yet to know of a single porce-in that has broken, or a failure of the crown to preserve the roots d perform the functions required of it.

Owing to the success of the crown and the request of a num-r of my friends, and the desire to give to the profession anything can toward its advancement or aid, I give you the manner of its nstruction. The first step is to prepare the root. When the st or second bicuspid has reached the point that it needs a crown, u will find the crown entirely gone or sometimes a portion of lingual cusp still remaining. If this is strong enough I grind ay what is left of the buccal portion to the gum or under it, ving the lingual portion as a post or anchorage for the crown, shown in Fig. 1. If there is not enough of this portion of the th left for an anchorage, I insert a How screw post, size B, into lingual portion of the root. Before inserting it I saw in the d of the screw, splitting it so the two parts of the end can be t over to form a Y to receive the screw driver (see Fig. 2), ming a head for the retention of the crown when filled with nent. The sides and edges of the portion of the crown or roots uld be prepared in a proper manner—contour and overhanging

*Read before the Minnesota State Dental Association at Northfield, July 1899.

enamel removed. I then form and fit a gold band as you would for an ordinary crown. When properly fitted I remove, and with a fine saw cut into the buccal portion of the band, as shown in Fig. 3 at B, then with sharp pointed shears cut out that portion as shown in Fig. 4. In cutting this away make allowance for the porcelain you are to use to get the proper bucco-lingual diameter as well as the mesio-distal; also, the length of the bite and articulation. Then take a small piece of gold, bend to an angle to fit this portion, cut out of the band as shown in Fig. 5, making a floor



Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.

and partition. In this partition cut two holes or slits to receive the pins in the porcelain. Stamp out the top and form, as shown in Fig. 6. I bend up the buccal cusp and bevel it, then fill with solder, so as to have solid cusps; this is soldered to the band, as shown in Fig. 7. The porcelain meantime has been ground to fit the band and top. In fact, these parts should all be adjusted at this time to get the proper proportions, articulations, etc. After the top has been soldered on the band, the porcelain is ground to more nicely fit into its proper place. A long pin cuspid or bicuspid porcelain is what I generally use. I put no backing upon



Fig. 5.

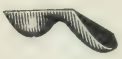


Fig. 6.



Fig. 7.

but insert the pin through the holes or slits prepared for them as shown in Fig. 5. When the porcelain is fitted, before it is set in place, I place gold foil cylinders at points marked 0,00 in Fig. 7, part of the foil going between the porcelain and the crown, with the portion extending over the edge. This I press down after the pins are fastened. I press the porcelain firmly into its place, holding it there; then I bend the pins outward toward the sides of the crown as shown in Fig. 10. This will keep the porcelain in place until it is invested and soldered. Before this is done I see that the excess of gold foil between the porcelain and crown is matted down to

proper place, to make a nice joint. You will find the solder will find this foil and make it as solid as the rest of the crown.

It is next invested in marble dust and plaster, as shown in Fig. 11. Let the investment come over the edge and floor of the porcelain; flow the borax about the pins and angle of the crown and place on either side a piece of low carat gold solder. I generally use 14 k. Heat up and solder in the usual manner; throw a fine jet inside and fuse the solder to the pins. It takes but little



Fig. 9.



Fig. 10.



Fig. 11.



Fig. 12.

heat; there is no danger of cracking or discoloring the porcelain if properly handled; when cool finish in the usual manner. Fig. 12 shows the front view of the completed crown; little or no gold will show if the band is under the gum. Fig. 13 gives a side view, and Fig. 14 the crown set upon the root. The first crown that I ever constructed of this kind was made fourteen years ago for a gentleman who came with the buccal cusp and portion of the superior



Fig. 13

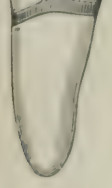


Fig. 14.



Fig. 15.



Fig. 16.

first bicuspid broken away; the nerve was alive but not exposed; he asked if I could save it. I told him I would try. I had no idea how I would construct it, but worked it out as I went along. Fig. 15 shows the crown as I made it for him. I saw the tooth last spring and it was in perfect condition. I made a good many like it, but felt there was a weak point in letting the porcelain be exposed upon the grinding surface. While I had not had a broken porcelain yet I felt that point should be protected, so I went to the other extreme and had the gold cover the end of the porcelain, as shown in Fig. 16. I made a number this way and finally struck a

happy medium and beveled the gold and porcelain, as shown in Fig. 13. By this means I get the protection of the gold, and yet but little of it shows in the mouth.

The evolution of this crown is shown in Figs. 15, 16 and 13. It is not an easy crown to make. I do not claim it is the best. For the number that I have put on I feel that it has a record that is hard to beat.

It has done my patients good; it has done me good. If it will do any of you good, take it; you are welcome to it.

The Standard.*

By Dr. H. Van Tassel, Marshall, Minn.

In reading the late magazines I find that, to use a nautical phrase, I have been "blanketed" as to many of the facts I had intended using, in a five minute paper upon the subject given, but I will endeavor to confine myself to a line of thought regarding "the standard" of dentistry, as it affects you individually and the public generally, that I do not remember having heard or seen discussed.

The old standard was made by such men as Gardette, Koecker, Randall, Greenwood, Hayden, Harris, Parmly, Atkinson, Robbins, etc. Students were taken in their offices and taught their individual methods, under their personal supervision and attention to every detail, *not the least of which* was a *just appreciation of the value* of a good piece of work when completed. They were giants in their way, and how proud any one might be who could insert a noncohesive gold filling so skilfully as to successfully bridge over an exposure of the pulp in a permanent and nonirritating manner, as some of them did. And what enthusiasm—Robbins traveling from Meadville, Pa., to New York to tell Atkinson how by the accidental breaking of a plugger point he had discovered the advantage of a roughened surface with cohesive gold, etc. They are the men who set us a standard at home and abroad. Was not Evans a contemporary and friend of some of these? With dentistry advancing with an electrical speed so great that some are able even to be mummified, in part, with themselves, what do we find the conditions under the "*fin*

*Read before the Minnesota Dental Association, July 26, 1899.

stic" standard of to-day? The period of preceptorship has passed away, and we have colleges galore. The young man invests in a few postal cards, receives circulars, selects that school which from a careful study of his stock of circulars and perhaps some correspondence, he thinks will most quickly, and with the least call upon his gray matter, confer upon him the authority to affix those letters to his name, the mere possession of which he considers as good as a competence already earned. In due time he presents himself before the proper officer, pays his $100 or more fees, receives his tickets, lecture card and a list of boarding houses, and, personality unconsidered, is safely launched upon his course. How about that entrance examination, you say? It is a good thing to talk about, but in *most* colleges it is not put to any other use. The sight of that money produces a case of *examination paresis* worthy of study. In due time or before the student is advanced to infirmary practice, he receives *an unadvertised course* in dental ethics or morality. He is required to perform any and all of the operations of the operating room and laboratory that he will meet in his after practice, and, under the immediate supervision of an expert demonstrator, cleans teeth for 25c., 50c., or $1, the bare cost of the materials. Inserts amalgam fillings, at a small charge for materials, 50c. only, or for all who are unable to pay for dental operations, a rubber plate is made for from $3 to $5, to pay for materials used, until finally he makes a small bridge under the direction of a skilled demonstrator, no charge being made for service rendered, but the patient paying from $3.50 to $4.50 per tooth or abutment, for materials. Making an opportunity, he says to patient, "If you want the space on the opposite side bridged, come to my room and I will do it for you at a little less than this one cost. And *his unadvertised course* is about completed, unless the infirmary is kept open during the summer to help pay the rent, he is ready to graduate. Many, perhaps most, of these graduates are young men without any previous business experience or training or any just appreciation of the value of either time, education or money, and what effect does the unadvertised course have upon them, when, as the authority says, "They are cast upon the public, and they are impelled to struggle for an existence," and as an existence does not come high, they are just about able to make it, by the aid of the special ethical instruction received in said course. The 50 c. college makes a 50 c. dentist, and the 50 c. dentist does a 50 c. job.

What are you going to do about it, individually? When a prospective dental student asks our advice, ought we not call his attention to the multiplicity of dental schools and of graduates of mediocre ability and perverted morals, who have taken the unadvertised course, and the effect this class of work is having upon the public, and explain to him that to succeed he must be possessed of that ability and stamina only obtained by the very best instruction possible? That when he has completed his course, it will have been a more than ordinarily successful one if he is able to read his professional journals and separate the chaff from the wheat. And at whatever sacrifice to himself, for his own good and future success, he ought to attend the hardest and most exacting school he can find, and try to commend one in which the unadvertised course is least prominent. While as a society is it not our duty to advocate and urge the adoption of these measures, which will tend to raise the "standard" of dentistry to an ideal where the puplic generally may be assured of an honest effort and reasonably good service? Why cannot the Minnesota State Dental Association, in addition to the good work it is doing, throw its influence in favor of higher ideals in dentistry by the adoption of suitable resolutions, declaring that it will heartily support and recommend students to such dental schools as require:

a. A full high school course as a prerequisite for matriculation.

b. Whose clinics are absolutely free, materials furnished and services being performed for those unable to pay for same and to none other.

c. That it believes such schools should, as far as possible, be State institutions, with such salaries attached to the several chairs as to enable the professors of same, to pursue their investigations and conduct their duties, without being dependent on a private practice.

d. That diplomas should be issued to and held by graduates during a continuance of good practice only, but should be forfeited upon proof of malpractice, or fraud in professional conduct.

Or such part of the same as may seem best and which we could ask all dental societies and the National Association of Dental Faculties to aid us in securing.

President's Address.*

By Dr. Laurence Leonard, Waseca, Minn.

This is the second time in an annual message that I have had the privilege and pleasure of calling your attention to important principles pertaining to our profession.

Last year we dwelt upon care of the teeth. This year we shall consider care of original research. We shall consider the importance of establishing centers of authority for the purpose of passing upon propositions, and collecting clinical experience and scientific tests into tangible form, which would be accepted until something better would be given.

In this young profession of ours—the ligitimate child of evolution and progress—there has been, and still are, a great deal of guessing and mistakes. I say this with respect, for it is a fact but seldom comprehended, that evolution and progress can take place only from the imperfect to the more perfect. We admit we are progressing; progressing from what? From error. And it is that we may advance more rapidly in this progress that the recommendations contained herein are made. For instance, at our last post graduate meeting in St. Paul a member from my neighborhood asked Dr. Johnson "Which is the best amalgam?" But the doctor shook his head and answered, "Oh, no; I could not answer that question." But the young man vainly persisted that he would like to know—and so should we all.

There are probably one hundred different amalgam formulæ being used in this State, with no one to tell us, save the vendor, the action of each. I believe that every brand of amalgam sold in this State should be tested by a committee of intelligent and impartial dentists and the result reported at our annual meeting and made a part of our proceedings. If this were correctly done the result would never have to be changed. Would not this be at least one tablet of truth, deviation from which would not be progress but error?

We do not know which will cut a given piece of enamel the easiest and quickest, a bur, chisel or stone. Is it not about time we knew? It is a simple proposition that can be easily solved by proper testing.

Have we any authority on the amount of contact approximal

*Before the Sixteenth Session of the Minnesota State Dental Association.

fillings should present? Some one says the point of contac should not exceed that of a cambric needle, and another says tha in lower molars it should be three (3) millimeters. One is a dog's the other a cow's. The profession should have a table giving th average measurements of contact points.

My idea is to have in each dental society; city, district, Stat and national, a committee to investigate and pass upon scientifi principles. In this way, instead of progressing in a circle or ligh from individuals being lost on account of the present difficulty o placing it before our profession, these local committees would b as milestones on which one could step to the supreme tribunal, the National Dental Association, whose deliberations and decision should be of the highest order and authority.

Can we not draw a lesson from the profession of law? Th decisions of the State Supreme Court are published in book form There is also published a digest of the same covering perhaps period of five years. The same is true of the United States Cir cuit Court, and the United States Supreme Court. There ar digests of these also. Thus a lawyer, in preparing a case, car in a very few moments, get a synopsis or digest of all authorit on that particular point. Now, our State dental committee would be synonymous to the State Supreme Court and ou national committee synonymous to the Supreme Court of th United States. Their decisions would be considered simply goo authority; not mandatory nor inexorable, but simply availab good authority.

We lack order and subordination. I do not mean to deny th individual autonomy. On the contrary, I fain would give hi greater than he has. I would give him decisions and what accepted as law so that in his investigations he might be able discern when he discovered a principle hitherto unknown or o that refutes an accepted law, and then a systemized means, or cha nel, through which he could proclaim his "Eureka" to the wor

In this way we would have both authority and autonom Autonomy alone, and this is all we have at present,is not sufficie Authority alone is degenerating. Authority and autonomy togeth are elevating. I do not think that our national society should legislative; rather it should be a scientific tribunal.

In this way the individual would step with his formulated a systematized theory or project to the State committee, who wou

nvestigate carefully and if found worthy, would recommend it to the committee of the national section to which it belonged, who would n turn, if found favorable, recommend it to the national society. n this way our profession would soon gain a creditable founda- ion and digest of facts, which correctly gained, like truth, would endure.

Dental Jurisprudence.*

By F. F. Graves, D. D. S., Denver, Colo.

When your honorable president called on me to prepare a paper for your consideration, "Dental Jurisprudence" at once suggested itself to me as a subject that had not been used at your annual meetings, and would probably interest you in a different manner and on a different line of thought from that which is usually employed at the dental conventions.

I shall abbreviate my subject considerably, but will try and touch a little on all the material points.

Dental jurisprudence is defined as that science which teaches the application of every branch of dental knowledge to the purposes of the law; therefore, to understand the subject thoroughly, one would have to possess a complete knowledge of dentistry in all branches and to know the law sufficiently to intelligently recognize what its requirements may be in a certain case, and be able to state it to a court and jury.

The range of dental jurisprudence must of necessity be limited, but a dental jurist must possess knowledge thorough and complete within its scope.

A court and jury to arrive at a definite and proper conclusion a case involving any or all branches of dentistry, must from necessity turn to some member of the dental profession to have these points made clear, and technical terms and phrases interpreted which are obscure in meaning to the unlearned or layman, but which can be made perfectly clear by an intelligent dentist in the capacity of an expert.

Now a dentist may be called to testify either as an expert or nonexpert. As experts, dentists are classed with M. D.'s and other expert witnesses. An expert witness is any person who, owing to superior knowledge and experience, is qualified to give an opinion superior to the ordinary witness on that branch of

*Read before the Colorado Dental Association.

science concerning which he is called to testify, and as such, cannot be asked but hypothetical questions, and therefore need not be conversant with the facts in the case at issue. The line between expert and nonexpert is always clearly distinguishable. As a rule, nonexperts are confined to mere statements of facts, while the expert is summoned to testify or interpret to the satisfaction of the jury, the accepted scientific or technical thoughts upon such questions with which they are unfamiliar.

Before a dentist would be allowed to give expert testimony, he would have to submit to a preliminary examination, or put upon his *voir dire*, which is for the purpose of determining as to his qualifications in that line of knowledge and skill.

He may be called upon to give testimony in all cases originating in the profession, either civil or criminal, to a piece of prosthesis or to malpractice. He may be subpœnaed by either the plaintiff or the defendant, and he is not responsible for the result of his opinions.

Identification by means of the teeth has been employed for a period of a century and a half past; as far back as the middle of the eighteenth century cases are on record where dead and unknown bodies have been positively identified by peculiarities of the teeth when all other means have failed. So, also, have murderers been brought to justice by these means; and so have innocent persons, accused of grave crimes, established their innocence, when peculiarities of the teeth are considered a reliable means of identification in the description of the alleged criminal. Thus when the identity of a corpse is suspected, especially as the hair, clothing, etc., are not sufficient, the dentist of the person whom the deceased is suspected to be, is summoned to examine the mouth of the corpse, and to testify whether the peculiarities of the teeth etc., are similar to those of his former patient, and thus establish his identity. The dentist has many means of positive identification, such as the presence or absence of teeth, the presence dentures, fillings, crowns, etc. In this manner, in the case of Timothy Monroe being identified as William Morgan, the murdered Freemason, in 1827. Many of you present have probably read heard of this case, especially of the disappearance of Morgan, who had written a book exposing the secrets of the society of Freemasons. At any rate, Morgan disappeared, and many theories were advanced as to what had become of him. Finally a bo

as found that answered almost perfectly to the published description of Morgan. The testimony of Mrs. Morgan and others eemed to leave no doubt but that the body was that of Morgan; he gray beard, the bald head, much hair on the breast, long white airs in the ears; also a mark of inoculation on the arm, teeth ouble all the way round, two of them being extracted on the same ide of the face, the dentist having the same teeth which fitted xactly, the marks of a surgical operation on the large toe of the ft foot, all seemed to be proof of a character sufficient to leave ttle doubt remaining, notwithstanding the clothes found on the ody were different from any Morgan had ever worn. The verdict as, that the body was that of William Morgan. Soon afterward, Canadian advertised for the body of Timothy Monroe, which aused the body to be exhumed, when, on the holding of a second quest, it was discovered that the teeth were not double all around front and that five teeth had been extracted from this body, hile Morgan had lost but two. The second jury found the body be that of Timothy Monroe.

Time and space will not admit of the citation of any more cases t length. The celebrated case of Tascott, the murderer of Snell, e Chicago millionaire, which filled the papers a few years ago, is nother case in point. A man in Philadelphia was arrested for ascott, and came very near being convicted, when it was discovred that the accused had not the gold fillings in the incisors that ascott had, and the man's innocence was established primarily y his teeth, corroborated by some other proof. Now we leave e subject of experts and take up malpractice.

Before leaving the subject of experts, however, I want to repeat ittle story I heard with reference to a medical expert, and which rves to illustrate that one must not be too technical with his rms in testifying in his case. The story runs, that on a trial for sault and battery, a surgeon in giving his evidence, informed the urt, that on examining the prosecutor, he found him suffering om a severe contusion of the integuments under the left orbit, ith great extravasation of blood and ecchymosis in the surround- g tissue, which was in a state of tumefaction; there was consid- able abrasion of the cuticle. Judge: "You mean, I suppose, at the man had a black eye?" Witness: "Yes."

It would be easy to multiply examples of this kind. This is t science, but pedantry and serves only to disgust the counsel

and judge, and bewilder the jury. An expert should, when tal ing to the layman or unlearned in the profession, use as plain la guage as is consistent with the case at hand, and so also, I thi the dentist should, in his office.

Malpractice is divided into *negligent*, which embraces tho cases where there is no criminal intent or purpose, but gross ne ligence in bestowing that attention which the case requires (as a state of intoxication); *ignorant*, where operations and treatmen are performed in a way calculated to do injury, and actually do harm, and which a properly educated and skilled dentist wou know was not proper in the case, and *willful* malpractice, where dentist performs operations or treatments with malicious intent do injury.

Dentists, by holding themselves out to the world as suc engage that they possess the reasonable and ordinary qualificatio of their profession, are bound to exercise reasonable and ordina care, skill and diligence, but that is the extent of their liabilit The burden of proof lies with the plaintiff in all actions for m practice, to show that there was a want of due care, skill and di gence, and that the injury was for want of such skill, care and di gence.

The reasonable and ordinary care and skill which the l requires of dental surgeons is such as those in the same gene line of practice and in the same general locality have and exerc in like cases.

Now, in reference to locality, a dentist in a small town sparsely settled country would scarcely be expected to possess same skill and knowledge as he who resides in a large city, a can take advantage of the many opportunities afforded him, and would be unjust for a jury to render a verdict on that line, and e court would, in its instructions, emphasize that fact.

The science of dentistry is constantly changing and advanc g The discovery and introduction of new medicines for treatme s and the inventions which are coming into use and being reco- mended by the majority of dentists who are up to date, as a natu sequence varies the standard of ordinary knowledge and skill; d methods of operating and treatment are being superseded by mod n methods. When such changes of treatment and operating are g- erally known and adopted in a locality they become ordinary, d dental practitioners of such localities are responsible for a kno l-

lge of these changes, and are expected to practice them. There no arbitrary rule that governs, however; for instance: There ay be two or more remedies for treatment of the same case; there ay be different instruments for performing the same operation; such cases the dentist will have to rely on his own judgment, d where reasonable doubt exists he is not liable for adverse sults, providing it can be shown that he did the best he could der the circumstances. A dentist must exercise good judgment performing a new operation, or in the use of a new instrument, d see that no injury follows to the patient as a result of the ex- riment; for if injury should follow he can be held liable for mages in the same. To illustrate the point, I will, with your rmission, cite a case on record of two surgeons who used a new strument on a patient with a fractured limb, and an action was stituted for malpractice, and the gist of the ruling of the court is follows: "That it appeared to the court that it was the first periment with the new instrument; if it was it was a rash action, d he who acts rashly acts ignorantly, and though the defendants ay be as skillful in their respective professions as any two gentle- en in the country, yet the court cannot refrain from saying that this particular case, they acted ignorantly and contrary to known les and usages of surgeons." However, if a dental practitioner s a new method of operating or treatment which appears to him be applicable to the case and it is founded on good judgment, d furthermore, he could show to the satisfaction of the court and y that it was an improvement over the old method in use, or t it was the only one available, he is privileged to use the same d he would be exonerated if the injury could not be directly ributed to an unskilled or imprudent operation. The aim of law is to arrive at a just and equitable judgment in the case, as sed on the facts presented.

As has been stated, new operations and instruments are added by day to the science of dentistry. Those that have been pted and adjudged by the body of the profession necessary for benefit and advancement of mankind, the dentist is expected employ; at least, that is what the community and his patients pect of him, viz., that he give the best services and the benefit any new discovery in dental science. It has been a question ong dentists at different times, as to their legal right to give sthetics. There can be no question but that the dentist has

the absolute right to administer any and all of the anesthetics, providing that he complies with all the laws and enactments regulating the practice of dentistry in the State or county in which he resides. He is expected to render the patient the best service and treatment within the limits of his ability, and where in an operation he can mitigate or reduce the pain, he should do so, if the operation demands it, even to the administration of an anesthetic. He, however, must thoroughly understand all of the practical details of the operation which the court would hold to constitute ordinary skill. If he can prove that he is thoroughly familiar with the methods of administering anesthetics, with all the precautions to be observed, he will not be held liable for adverse results, if he applied his knowledge properly to the case.

It of course necessarily follows where life is in danger, a greater degree of skill is required of the dentist, and what would be ordinary skill in one case, would be adjudged *gross* negligence in the other. Here the legal interpretation of "ordinary skill" is held to include all knowledge and experience the profession has attained on the subject. The standard of skill required may be illustrated in the following case recorded in an eastern State: The defendants undertook to extract a tooth while the patient was anesthetized with nitrous oxide gas; in extracting the tooth the forceps split, and part of the tooth lodged in the patient's throat, causing coughing and vomiting for four weeks. Under the circumstances, the court was of the opinion that the defendants were bound to use extraordinary care. They knew that the plaintiff, while under the influence of anesthetics, had no control of his faculties; that he was powerless to act, and that he was unable to make the slightest effort to protect himself from any probable or possible consequences of the operation that might follow. He was in their charge and under their control to such an extent that they were bound to exercise the highest skill and diligence to avoid every possible danger, for the law implies duties on men according to the circumstances in which they are called to act.

Now as to a specialist. The law recognizes a difference existing between the relative skill and knowledge of a specialist and a nonspecialist or general practitioner; in other words, a dentist holding himself out of the world as a specialist in any particular branch, whether mechanical or surgical, or in the administration of anesthetics, is by law presumed to possess more than the

ordinary skill and knowledge of the subject than the general practitioner. He is expected to use the highest skill and knowledge attained by the profession on the subject, and anything short of that would be condemned.

In cases where there is a reasonable doubt as to what treatment should be used, or what dental appliances may be applied, the dentist would not be held liable for adverse results, providing it could be shown that the error was honest and the dentist had used good judgment in the matter, and where uncertainties exist and the dental surgeon pursues a course that would meet the approval of the body of the profession, there need be no fear as to what would be the result before a court or jury.

We next take up the subject of negligence, and I hope you will pardon me if I touch on this in a very brief manner. A definition for negligence which would be recognized in law as negligence, consists of a want of that reasonable care which should be exercised by a person of ordinary prudence under all existing circumstances, in view of the probable danger of the injury, which would mean as applied to the dental profession, that the dentist is expected and should use reasonable care and judgment in all cases he undertakes, and it is held as a contract—an implied one—to do so, whenever he engages to serve a patient.

The courts have divided negligence into three degrees:

Gross negligence, which is the absence of slight care.

Ordinary negligence, which is the absence of ordinary care.

Slight negligence, which is the absence of great care.

There is no fixed and unswerving rule as to what constitutes care and diligence in every case. All the circumstances will have to be weighed and considered. The one aim the law has in these cases, as in fact in all cases, is to be reasonable, and as it is a question of fact for the judge to decide, it would depend on the evidence presented. In many cases the evidence would prove conclusively of carelessness, such for instance, as extracting a sound tooth for a diseased one, which in all cases would be gross negligence.

I have said enough of negligence to give you an idea as to what the dentist's rights are, and also what the patient may expect, and will now speak of what would be the dentist's greatest defense in the cases mentioned above. In most all actions for malpractice, from whatever cause, contributory negligence is the principal

defense, which means where the injury complained of follows in part from the negligence of the patient in following the instructions of the dentist. Say for instance, in the matter of keeping engagements for the treatment of alveolar abscess ; if the patient did not follow the directions of the dentist in every particular, and evil results should follow, as a fistulous opening on the external cheek, which, as you all know, produces an ugly scar, contributory negligence on the part of the patient would be sufficient defense for the dentist, as it can be plainly seen that the burden of responsibility would be shifted from the dentist to the patient, and the dentist ceases to be held liable.

Where negligence is the ground of an action, it devolves upon the patient or plaintiff, to trace the fault for his injury to the dentist, and for this purpose he must show the circumstances under which it occurred. If from these circumstances it appears the fault was mutual, or that the injury was the result of contributory negligence imputable to the patient, he has disproved his right to recover. There is a legal maxim that no person shall profit by his own wrong. Along this line, the dentist will always have a great advantage over the prosecutor in all actions for malpractice, because it is rarely that patients absolutely follow the dentist's directions in protracted treatments and operations. In civil suits for damage arising from malpractice, the amount to be recovered is largely a question for the jury to decide.

The principle of compensation is the governing principle in the measurement of damages. The bodily pain resulting from the injury is always to be considered in estimating damages. It is a general principle that every defendant shall be held for all those consequences which might have been foreseen and expected, as a result of his conduct; but not for those which he could not have foreseen and was therefore under no moral obligation to take into consideration.

I now in a brief manner will take up contracts. Time admits only of definitions.

A contract is an agreement between two or more persons upon sufficient consideration for the doing or not doing of some particular thing. Contract comprises in its full and liberal signification, every description of agreement, obligation or legal tie, whereby a party binds himself or becomes bound, expressly or impliedly, to another to pay a sum of money or perform or omit to

perform a certain act. Contracts are either express or implied; express, when formally stated or written; implied, when the inference can be drawn that certain things are to be performed from the actions of the parties thereto; contracts between dentist and patient are usually implied, and may be enforced the same as an expressed one. Under the implied contract, the dentist agrees to render his services with at least ordinary skill and suitable to the case about to be performed. The patient who accepts such service promises to pay a sufficient compensation to be named by the dentist. In this particular, I wish to say that the dentist's reputation and large practice would cut some figure in what would be considered sufficient reward as against a dentist who assumes an obscure position in the profession. The presumption of law is, that both dentist and patient will honestly perform the obligations incident to the contract and the dentist cannot legally, after once undertaking the contract, withdraw without the consent of the patient; neither can the patient withdraw without the consent of the dentist. Fraud on the part of either party to the contract voids it, and if a dentist warrants his work in the whole or in part, the patient can insist on the guarantee being made good. A dentist may offer his assurances that the work is performed with his best skill and knowledge, but he must not guarantee the permanency of his work. And there is no reason why he should; it only furnishes a precedent or bad example, and educates the people to expect something more and lasting from dental work than that which the dentist can always deliver, and when the work fails he is discredited with that patient.

There is a subject I wish to touch on here and one which is, I take it, a source of considerable annoyance to the dentist, and also one from which he suffers financially, and that is. broken engagements in the office. Every dentist present suffers more or less from this cause. He is apt to pass it over with a mental protest, thinking there is nothing to be done—no recourse—but to swallow his disappointment and look pleasant. Say he has an appointment at 10. About an hour or so after, and when it is nearly time for another patient to appear, the 10 o'clock one will float serenely in and offer as an apology some frivolous excuse, either ignorant of the inconvenience and loss of valuable time to the dentist or, if they do know, exhibiting a selfish disposition to consider no one's convenience but their own. I know from my own experi-

ence, whether from a tardy appearance, or whether they do not come at all, I have been rushed the whole day from what might have been accomplished in a leisurely manner and with greater satisfaction to both the patient and myself. Now the dentist has recourse, and that is, to be paid for lost time; and that is what he is morally and legally entitled to. The amount, of course, would be too trivial to invoke the law, but at the same time his cause would be a just one and would be upheld by the courts. I state this just to show a dentist's legal position in the matter, providing the patient refuses to pay for time of a broken engagement. The law views the acceptance of an appointment by a patient for a specified time as an *implied contract*, thereby holding the patient responsible for such accepted time if the patient voluntarily violates the contract. The rule is reasonable, because the dentist relies on his professional time for his support. We ought to enforce this rule more. With united action in this matter, the public would soon become educated. The dentist has the same remedy at law as do parties in other lines under implied contract; where no price is stipulated he is entitled to recover a reasonable fee commensurate with the amount of time, skill, knowledge, etc., employed. In a general way, a minor cannot be held liable for services for which he contracts unless it can be shown that work was necessary, and was no more expensive than the case indicated, and then it would be void if the minor had a guardian or parent who had been in the habit of supplying his wants and making his contracts.

In this State, married women can buy, sell and make contracts and conduct any business on their own responsibility, and their husband's property would not be liable for their debts, except in those cases where they contract a debt for necessities, and where it can be shown as such to the satisfaction of the jury, then the husband is responsible to the creditor for the liability. What are necessities in each case is for the jury to decide. The weight of opinions is, that dental bills are necessities. In the matter of book accounts, to establish a bill in court in an action for money due, the books of the dentist are admissible as evidence, but what weight, depends on how methodical the entries are inserted, and if the whole journal and daybook seem to have the different items inserted properly, together with the dentist's affidavit as to the authenticity, will probably prove a claim.

There are other points I should like to have touched, but to open such subjects, and go into them as deep as I would like in order to make them clear, would consume too much time, and to continue simply with definitions *ad infinitum* would be of little interest to you, and no satisfaction to myself. Gentlemen, I thank you.

Experimental Study of Cements.*

By J. E. Hinkins, D. D. S., Chicago, Ill.

Gentlemen:—I am following the advice of my predecessor to a certain extent, in that I have not prepared any special address, but I have prepared a great many different concoctions of cements in the last year. You will remember that a little over a year ago Dr. Prothero mentioned that arsenic was found in the oxide of cement, and later Dr. Howatt read a paper before the Odontographic Society of Chicago, entitled "The Presence of Arsenic in the Cements." At that time I felt that the statements of those two gentlemen were erroneous. The first experiments that were made by me happened to be with the Cleveland standard cement, Harvard cement (which is handled by the S. S. White Company), and Justi's cement. I experimented a good deal with those three cements and gave them all of the different standard tests and failed to find any arsenic. But later I took up the subject more thoroughly and exhaustively, and the short paper I will read is a part of my own work, and part of it consists of quotations from Professor Long. After I had taken up a number of the American cements, experimented with them, and found an abundance of arsenic in the oxide of zinc, I thought I had overlooked some important point; therefore went to Professor Long of the Northwestern University Medical School, who has gone over every cement I have here and has endorsed my experiments to be correct. I may say here that have used the Marsh test, the Reinsch test, Fleitmann's test, the sulphureted hydrogen test, etc. I found arsenic in the specimens with all of the different tests. The Marsh test is considered the most universal test, that is, you can come to some conclusion as to the amount of arsenic found.

In examination of the cements I made separate tests of the solid and liquid of the original preparation, and also of the mixed

* President's Address, Chicago Dental Society.

pellets. I made the Marsh test of these various substances and, as confirmatory of the stains secured, used the hypochlorite reaction, and the very sharp reaction with silver nitrate after oxidation of the stain with nitric acid. This is unquestionably the most characteristic of the primal tests.

I have considered nothing as indicating the presence of arsenic which did not respond fairly to this test. The substances which gave the Marsh test will also give the Reinsch test. The best test for arsenic is the Marsh test, confirmed by nitrate of silver. The Reinsch test is not so distinctive, because the necessary confirmation is not so easily carried out.

Fleitmann's test. Generate hydrogen by heating to near the boiling point a strong solution of caustic soda or potash and some pieces of zinc. Drop into the test tube a little arsenical solution and spread over the mouth of the tube a cap of filter paper moistened with one drop of solution of nitrate of silver. Again heat the tube, taking care that the liquid itself shall not spurt up onto the cap; the arsenic is reduced to arsenicum, the latter uniting with the hydrogen as in Marsh's test, and the arsenuretted hydrogen passing up through the cap reacts on the nitrate of silver, causing the production of a purplish black spot.

The results of the different cements are as follows:

W. V-B. Ames, Metalloid.	Powder. Slight arsenic reaction. Liquid. No reaction.
S. S. White Co., Harvard.	Powder. No reaction. Liquid. "
C. Ash & Sons, Excelsior.	Powder. " Liquid. "
H. D. Justi & Son.	Powder. Faint arsenic reaction. Liquid. No reaction.
Britton, Vitrified.	Yellow Powder. Good arsenic reaction Gray " " " " Liquid. No reaction.
Hammond, Oxide.	Yellow powder. Fair test for arsenic. Gray " No " " Liquid. Nothing.
C. A. S., Gelb.	Powder. No arsenic test. Liquid. " " "
Cleveland Standard.	Powder. No arsenic reaction. Liquid. " " test.
Caulk's, Diamond.	Powder. Strong arsenic reaction Liquid. No arsenic test.

Fossiline.	Powder. Strong arsenic test. Liquid. Doubtful faint reaction.
Lynton.	Powder. No arsenic reaction. Pearl grey powder. Fair arsenic test. Liquid. No arsenic reaction.
Onyx, Johnson & Lund.	Powder. Strong arsenic reaction (trace of antimony). Liquid. No arsenic test.
Enamel, Johnson & Lund.	Powder. Strong arsenic test (trace of antimony). Liquid. No arsenic test.
Lithos Protective Supply Co.	Powder. No arsenic.

I have taken the utmost care with these reactions, and if there was any doubt I gave it to the manufacturer. This work is done for scientific purposes, and I have done it to the best of my ability, hoping that something might be accomplished that will be of value to the profession.

For the pellets I found the tests to agree with those made on the powders. Of the powders, I took about a half gram for each test, except in the case of Lynton's, when the amount on hand was not over a fourth of a gram. The pellets were rather small for exact tests in several cases, but I gave the substance the benefit of a doubt in all cases.

Inasmuch as most zinc ores contain arsenic, the presence in the prepared oxide almost of necessity follows. However, as there are some well-known ores in this country which are quite free from arsenic, manufacturers should be able to furnish an oxide without difficulty and at a moderate price.

I would not have been surprised at finding arsenic in the phosphoric acid liquids, as some of the acid of commerce is made by processes which would not exclude arsenic. The investigation of the acid liquid would be a very interesting question, as they seem to vary greatly in composition and behavior. I made no special tests in this direction, but noticed this fact incidentally when making the arsenic test.

I want to thank Dr. Ames for his kindness in furnishing me with a number of cements which he had, so that I did not have to run around and hunt up the different cements.

Incidents in Office Practice—Antrum Cases.

By Geo. T. Carpenter, M. D., D. D. S., Chicago, Ill.

Antrum trouble, or disease in the maxillary sinus, is more common than the average dental or medical practitioner is aware of. For several years I did not recognize the symptoms of the antrum diseases, but since I have given the subject more study I find that many cases of antrum trouble pass from one practitioner to another, some receiving slight attention, while others are unnoticed and the patient is not aware of the serious condition that exists. The diseases of the antrum of Highmore come from a variety of causes and are made manifest by from one to many symptoms. The acute cases, with aggravated symptoms, such as great pain, disfigurement, or a distressingly offensive odor, will make inquiry if need be, and seek speedy relief. But there are a variety of cases where the symptoms are not so clear. Some think they have disease of the antrum where the trouble comes from other causes, while others have antrum trouble and the condition is not recognized on account of the slight symptoms; and in some of the latter class it may be very difficult to convince the patient that his condition is serious.

I will report seven cases of disease of the maxillary sinus, or adjacent parts as taken from my case record, which had little or no pain or swelling and with but slight discomfort.

Case 1. Empyema of the antrum. Lady about forty years of age. Disease on left side of the face, caused from several diseased roots, which she had extracted, but pus still continued in the nose and alveoli. Was brought to me by her dentist. On examination I found no pain and but slight discomfort, with small passage to antrum and movable spiculæ of bone; also considerable necrosis, which were removed under cocaine with large bur, guarding against the destruction of the soft parts. The antrum was irrigated with antiseptic solution and packed with antiseptic gauze. Rapid recovery.

Case 2. Empyema of the antrum. Lady about thirty years of age. Disease of left antrum caused by abscessed bicuspid. Slight pain and discomfort, with pus and odor in left nostril. Opening made through the alveoli of second bicuspid tooth. Talbot's drainage tube inserted. Antrum was irrigated with antiseptic solution twice a week and recommended to be continued until

all odor and discharge had ceased. Patient was doing well when last seen, but not cured.

Case 3. Previous antrum trouble. Young lady had been operated on for a diseased antrum by a brother practitioner, and left with a large opening in the right canine fossa, which she claimed, under direction, was kept packed with antiseptic gauze and she expected to go through life in this condition. She was referred to me by another dentist that was not willing to treat the case. I removed the packing, found antrum in a healthy condition and applied crystals of nitrate of silver until granulations had filled in and completely closed the opening. No return of the trouble.

Case 4. Supposed antrum trouble. Lady about twenty-six years of age with tenderness in left cheek, first upper molar with gold crown, with considerable enlargement over and above buccal roots. Some tenderness and but little pain. Patient was afraid of blood poisoning, but the present condition dated back four years. On examination could find no other evidence of antrum trouble. Removed crown and opened through canals, also made a free incision through soft parts and the bony tissue and removed a straw colored fluid which was without odor. Found quite a cavity with bony walls, but no connection with the antrum. Gave the usual treatment for cyst with good result.

Case 5. Supposed antrum trouble. Man about thirty years of age. Said that he had had trouble with right antrum for about four years and had consulted both dentists and medical men who wished to operate by opening up the antrum. He had some discomfort on the right side of the face and thought at one time that it would break through the palate. Had clear discharge from right nostril when stooping forward. On examination found no sign of pus in the nose, no pain or pressure in canine fossa or palate, and on examination of post nares found right inferior turbinate hypertrophied. The osteum maxillare was open. Teeth on the right side in good condition except central and lateral which were pulpless and had been filled, and had received previous treatment for trouble, but still complained of them being tender. My treatment was to remove the posterior hypertrophies of inferior turbinate with cold snare and pack snares with antiseptic gauze, moistened with comp. tinct. of benzoin. Tenderness has left the incisors and the discharge from the right nostril has ceased and the patient considers himself cured.

Case 6. Empyema of the antrum. Married lady, between forty-five and fifty years of age. Has had trouble with left antrum for ten years. An opening was made through canine fossa by a general practitioner, but allowed to close before cured. When patient was referred to me she had some discomfort and pain, with slight discharge and odor from left nostril. With cocaine anesthesia and large bur I made an opening above and posterior to second bicuspid. Irrigated with an antiseptic solution every day for a week or ten days. Talbot's drainage tube was used. Patient is now using irrigation. Condition much improved. Patient irrigates antrum with antiseptic solution about once a week. It is now about one year since the drainage tube was inserted.

Case 7. Emypema of the antrum. Married lady about forty-five or fifty years of age. Has been quite an invalid; has suf- suffered about eight years with neuralgia on side of the face. The right cheek becomes tender with protrusion of eyeball. Relief comes spontaneous by the discharge of pus through the natural opening into the nose; this sometimes gives relief for months, when another attack will occur. She is now also suffering from an abnormal growth on gum, caused from irritation from her plate, also from pyorrhea in the lower cuspid on same side. Pyorrhea treated, also iodine applied to tumor and spray used in the nose with some relief. By transillumination with mouth lamp, shows antrum on the left side bright, while on the right side opaque. Percussion finds much more tenderness on right than left side, and after the use of spray in the nose can blow out softened crusts from right nostril, which gives temporary relief. She is afraid of an operation.

PROCEEDINGS OF SOCIETIES.

Chicago Dental Society.

DISCUSSION ON PRESIDENT'S ADDRESS. SEE PAGE 807.

Dr. W. V-B. Ames was asked to open the discussion. He said: I would rather some one else opened the discussion on this subject, and particularly one who has observed during a long practice whether the arsenic which is said to be present in the cements cuts much of a figure in the general utility of the material as used by dentists.

Dr. E. D. Swain: So far as my experience goes, I have never observed any deleterious effects from the use of cements, even in close proximity to the pulps. I should consider that if there was a trace of arsenious acid in a cement filling the pulp would be destroyed. It is a fact that pulps often die under cement fillings, especially when dentists have attempted to perform the operation of capping; but ordinarily I have seen no bad results from the use of cement in that direction. It seems to me that if arsenious acid were present in the slightest extent, I should expect a dead pulp in a tooth which has carried a cement filling for a considerable length of time. My impression is that this is a bugbear that we need not fear very much.

Dr. A. W. Harlan: I have listened to the paper of Dr. Hinkins with considerable interest, and I have this to say: Metallic arsenic is inert; it has no effect whatever on the pulp of a tooth, and I take it, that the mere fact of the effect of arsenic in the oxide powder is that it is not AS_2O_3, or H_2ASO_4, but that it is metallic arsenic, and consequently if it were there in one-tenth, one-eighth, or one-half the quantity of the whole powder, it would not have any effect whatever on the pulp. When Dr. Clifford Mitchell examined some of the cements a year ago, he found there was not a trace of arsenic; the mere fact that arsenic might have been found in the powder in Dr. Ames' cement, in Justi's cement, or any other cement, does not prove that it is AS_2O_3, but it may be metallic arsenic, which is absolutely inert.

Dr. J. G. Reid: I would like to know why, if possible, more pulps die under oxyphosphate than under oxychloride of zinc fillings.

Dr. E. J. Perry: I would like to ask Dr. Reid if he knows that to be the case.

Dr. Edmund Noyes: I would ask Dr. Reid if he has more pulps die under oxyphosphate than under oxychloride fillings.

Dr. Reid: I have made the statement as a general proposition, and I do believe, from my experience, that I have had more pulps die under oxyphosphate than under oxychloride fillings.

Dr. Noyes: Personally, I have observed very few dying pulps under either one of those filling materials. I have always feared the effect upon pulps of oxyphosphate of zinc, supposing the irritant in it to be the phosphoric acid, and in my practice I have almost invariably put something between the oxyphosphate of zinc and the pulp, usually a very thin layer of Hill's stopping, and I have not noticed any special liability for pulps to die under oxyphosphate fillings.

Dr. Reid: Exposed or otherwise?

Dr. Noyes: I cap very few pulps that are so fully exposed as to bleed. I do not think I have put oxyphosphate of zinc directly upon an exposed pulp without interposing something.

I would ask Dr. Hinkins, in closing the discussion, to say what form the arsenic is in in these powders, whether it is metallic or some combination, and if practicable, to state what changes are liable to take place in the arsenic which would make it poisonous. The suggestion made by Dr. Harlan is a very important one and seems to relieve us of any anxiety in regard to the deleterious effects of arsenic in cements. It has been suggested by Dr. Harlan that it is arsenious acid which is poisonous to pulp, and that metallic arsenic and other combinations of arsenic are inert. This is an important aspect of the question, and one which I have never thought of.

Dr. J. N. Crouse: The question of what causes a pulp to die under an oxyphosphate filling more frequently than it does under an oxychloride of zinc filling is one that has disturbed me many times in my practice, even when pulps were not exposed. My observations have extended over a long period of time. When you cap a pulp under a bridge, or where a tooth has been cut down considerably, so that you strike the sensitive dentine with your wheel, then set the cap with oxyphosphate of zinc, the pulp will die under it. I have thought that the way to prevent this was by cooking the albumin, that is, applying a coagulating agent to the surface before you apply the oxyphosphate. I have acted on this principle and have avoided death of the pulp from that cause

Iy attention was called to this question more distinctly at the ime when oxyphosphate came out, and before that we were using xychloride of zinc for capping pulps. When I changed to oxy-hosphate I found many of my patients came back with the pulps f their teeth dead. Since then in the setting of crowns, where ou cover the teeth over without the phosphate, you find patients ome back with dead pulps; you drill through the cap and treat the ooth. The chloride of zinc is a great coagulator, much more so han carbolic acid, and I consider it safer to cap a pulp with, lthough I have put plenty of carbolic acid over a pulp before apping it. Pulps will surely die under oxyphosphate capping if ve do not cook the albumin.

Dr. W. V. B. Ames: The remarks of Dr. Hinkins have opened up subject in which I have been very much interested, ever since it as first agitated. I have not, however, given it much consideration n an experimental way, from the fact that in my twenty years of ractice I have not seen any difficulty from death of pulps which ould be attributed to cement. During twelve years I used the usti, and for eight years cements of my own make. There is another hase to this question which has interested me more as a manufac-urer—the getting of a superior liquid, which is a big problem. It is airly easy to get a satisfactory powder. I must say that I have ot run up against arsenic in cements in a very serious way. I ope, however, that the various tests can be carried out so as to each some definite conclusions, either by Dr. Hinkins, or some ne else who is qualified to do the work. If some one will take the me to find out in what form we have this arsenic, to find out if it arsenious acid, which I doubt, and if it is, whether in the differ-it cements, the conditions which we have after crystallization ake any special difference or not, it will be of great value to the rofession.

When Dr. Howatt read his paper before the Odontographic ociety, on "The Presence of Arsenic in Cements," I made the atement that if a cement with a given proportion of arsenic should ystallize in a way that gives very little or no porosity, the only senic that could act upon the dentine or nearby pulp tissue ould be that upon the free surface of the cement mass nearest the ntine or pulp tissue, and the amount would be so small that I lieve it would be inert; whereas, if a mass of cement contains a nsiderable proportion of arsenic and at the same time is very

porous, there would be nothing to prevent the most of that arsenic from getting in its work on the vitality of the tooth, if this arsenic be in a potent form, which I doubt. As to whether the arsenic might have a bad effect or not, I think the real test has not been carried out. Pellets have been made and dissolved in sulphuric or hydrochloric acid, or powder has been dissolved in the acid and the entire amount of arsenic has been given a full chance to become manifest. We do not have such a condition in the mouth; we do not have sulphuric acid and hydrochloric acid to dissolve the mass and allow the whole amount of arsenic to become manifest. It seems to me the proper test would be to take a pellet made from so much powder and so much acid and immerse it for a day, a week or a month in water or saliva kept at a body temperature, and place the solution only in a flask and see if you get an arsenic reaction from that. This test would be more nearly analogous to what really takes place in the mouth than if you dissolve the entire amount in an acid. The acids used in the Marsh test will dissolve any form of arsenic compound. Arsenious acid is the only compound of arsenic at all soluble in water. If in a cement we have arsenate, or arsenide of zinc, it is wholly insoluble in water and is only soluble in acids. If it is arsenate, or arsenide of zinc it is simply out of the question to have any reaction in the cavity of a tooth.

Dr. Hinkins made some tests with my cements. For instance he used some yellow powder which was not calcined and some gray powder which was highly calcined, which calcining would presumably drive off the arsenic, and it would be absolutely free. If, however, the trace of arsenic in the oxide would combine with it as arsenate or arsenide of zinc, the calcining would not drive it off so readily, and the fact that the highly calcined gray powder gave as much reaction for arsenic as the powder which had not been calcined, leads me to think that the zinc is an arsenide or arsenate, which would be wholly inert. Dr. Ames has recently advanced the claim that the arsenic in cement powder is in the form of arsenite of zinc and that this is wholly inert. This is an interesting subject and I hope it will be definitely and systematically worked out. I must say, however, that in my practice of twenty years' use of cements, I have not seen any results which would lead me to think that arsenic is present in many of them in a potent form. I have not used some of the cements which have been found

to contain the largest proportions of arsenic, so I cannot say what might happen. I must add that I cannot believe that this arsenic is in a potent and dangerous form, as if it were I would have had no end of devitalized pulps in my practice, in which I use inlays so freely. As to the difference between oxyphosphate and oxychloride it cannot depend on the powder, as that is identical in each preparation.

Dr. A. W. HARLAN: I do not think Dr. Hinkins has satisfactorily settled the question of the identity of AS_2O_3, which is arsenious acid, and H_2ASO_4, which is arsenic acid. If you add sulphuric acid to zinc it does not convert it into arsenious oxide even under heat. In the oxychloride of zinc, which is composed of $ZnCl_2+H_2O$, and ZnO, you have not the possibilities of arsenious oxide, even though arseniureted hydrogen or arsenite of zinc is present. The possibilities are not there unless you have heat, and heat is not present. When you have H_2ASO_4 and AS_2O_3 and ZnO, you do not have the possibilities of arsenious oxide, or the arsenious acid, because you must have heat in order to make the combination. I think it is absolutely impossible to apply a theory to the destruction of a pulp from the metallic arsenic which has not been volatilized (?) in the manufacture of oxide of zinc. I have no interest in any manufacturer, as I know Dr. Hinkins has none, and the mere fact of the discovery of arsenic in cements, from the various tests that have been mentioned, does not prove that it is arsenious oxide or dioxide, or arsenic acid. I am willing to admit that one may find, by tests, arsenic present in cements, but I simply say that it is absolutely inert, and unless you have heat above the temperature of the human body, the arsenic has a *nil* effect. It does not do any harm whatever. I believe there is no arsenic acid in the ordinary commercial oxide of zinc, because I have tested it myself. It has arsenic and nothing else, and I do not think we ought to let a discussion of this kind go out to the world without a little better ground for making such statements. I wish to protest against the assumption that there is any arsenious acid or arsenic acid in any cement powder that is manufactured by any manufacturer at the present time. It cannot be deleterious as long as it is arsenic. You can swallow an ounce of metallic arsenic and it would not hurt you, as it would be ejected at once.

Dr. J. E. HINKINS (closing the discussion): The remarks of

the last speaker are so wide of the mark that I would not think of saying anything in reply were it not for the fact that his knowledge of chemical nomenclature is decidedly puzzling and misleading, hence the importance of proper correction. The doctor states that I have not satisfactorily settled the question of the identity of arsenious acid and arsenic acid, and by an absolutely incorrect use of symbols and formulas, attempts to show my error. Even the beginner in chemistry must recognize that the doctor is applying formulas here, the meaning of which he fails to comprehend.

Now, to come to the real merits of the discussion, the claim is made that if arsenic is present in the cements, and there can be no question of that, it must be the free or metallic form and not in the oxidized condition. This is not possible. The methods of producing the commercial oxide of zinc provides for the fullest possible oxidation rather than reduction, and the subsequent high temperature treatment claimed to be applied by the dental manufacturers could not possibly dissociate this oxidized form to the extent of furnishing free arsenic. Whether the arsenic is present as arsenious oxide, pure and simple, or as a combination of arsenious oxide with zinc oxide it is not possible to state, and idle speculations or formula juggling, such as the doctor has indulged in, will not help settle the question. It is well known that many of the metallic compounds of arsenic are easily decomposed, especially by acids, and therefore they act as strong poisons. The phosphoric acid used in making the mixture would certainly aid in increasing the solubility of the arsenic compound, whatever it is.

The Odontographic Society of Chicago.

May 15, 1899.

The meeting was called to order by the president at 8:10 P. M.

After preliminary business the president introduced the essayist of the evening, Dr. G. A. Thomas, who spoke on the subject of "Porcelain Dental Art."

Dr. G. A. Thomas: When I accepted an invitation from the president of this society to make a few remarks in regard to the use of porcelain in dentistry, I concluded that, coming from the despised and lowly ranks, the prosthetic department of the profession, it would be presumption on my part to undertake t

read an elaborate paper on the standing of porcelain in all its phases in our work as it is to-day; so that in accepting his request I did so with an idea that a few practical thoughts and suggestions that have occurred in my experience as a laboratory man would be probably of as much interest and instruction to those who are not in active laboratory work all the time, as to offer a repetition of papers that have already been read. It would be a little egotistical on my part to try to read an elaborate paper here after the paper that was read a year ago by Dr. Nyman, which I presume all of you have read, and therefore I shall confine myself to the experiences that a laboratory man meets with in his work.

The matter of porcelain in dental art is a question that admits of no material negative argument; we must admit that porcelain has taken the place of every other material in the niche which it occupies in the art of replacing the natural teeth. The question then arises, how can we best arrive at those results desirable in our work and meet the requirements of the various conditions that come before us? It is an adverse and uphill work to repair the broken-down teeth, for nature has had all of the advantages in the matter of placement, stability and material, and to furnish anything that will take the place of the natural teeth in material, appearance and durability, is, as I say, an adverse work—an uphill job.

In taking up the different kinds of porcelain that we have to do this work with, the matter of fusibility will probably occur to us as prominently as any, and by referring to the table published in Dr. Nyman's paper, you must agree with me that fusibility has very little practical effect in the work. We find here in the table that he gives us, that while Downie's and Wyatt's bodies fuse at the same point as 18 carat solder and crush under a pressure of 90 pounds, Ash's and Brewster's fuse at the same temperature as 9 karat solder and crushes at 325—Brewster's high fusing with a fusibility of 2045; Close's at 2120 crushes at 380 pounds; Johnson & Lund's at 385; while Moffat's with 2150 has a crushing resistance of 405 pounds.

Now it has been stated that the force of the human jaw is in the neighborhood of 175 pounds, so that with these figures given as to the resistance of the various bodies used here, it is not a practical question as to which one of these bodies we use. The fusing point of enamel, as we all understand, is somewhat less than the fusing point of the body—must necessarily be so.

In the matter of getting the colors, the fusibility again occurs to us. In my experience we find that with the exception of Johnson & Lund's bodies and enamels, the higher the fusing point, that is, the higher the heat applied after you have reached just about the fusing point, the more tendency there is to bleach the different colors, while on the other hand, with Johnson & Lund's, the color seems to grow stronger as you increase the heat after the material begins to fuse. The matter of getting colors is one, of course, that we are all very anxious to thoroughly understand. In my experience I find that dental houses furnish us too many colors. Five or six extreme colors are sufficient for all the various shades that we need in our work after we have had a little experience in mixing them with the original body to get the shade that we desire.

Just a word in regard to mixing. The materials, if you mix them, should be mixed thoroughly in a wedgewood mortar, and if they are not thoroughly mixed, the materials will have a crackled appearance in baking and this can only be overcome by mixing it twice as much as you may think ought to be. I have found that all the materials that have been named in this list which I have given, with the exception of Moffat's, which I know nothing practically about, will submit to mixing. They are, as a matter of fact, nearly the same materials mixed in different proportions and ground in different consistencies.

Now, as to the matter of grinding and fineness of material to be used, I have had some little controversy with some of the members of the profession on the proposition that there is much more shrinkage in the finer ground bodies than there is in the coarser ground bodies. Now, as a matter of fact, I have paid particular attention to this question of shrinkage, and I find that the fine bodies require a longer time for thoroughly drying, and when thoroughly dry, shrink less than the coarser materials. This is just simply a matter of my own experience and observation. Among the bodies that are mentioned here is Brewster's, and I find that one of the tendencies of that material is not to adhere closely to the metal. The longer you allow the work to dry, and the more thoroughly it is dried before heat is applied, the less of this tendency of shrinking away from the metal occurs, but even with the most careful grinding it will shrink away from the metal a little, and to obviate that, in a case yesterday and one to-day, when I was making a molar upon a platinum cap, I painted the surface of the pl-

inum before putting the material on, with a very weak solution of liquid silex and I was very much pleased with the result, there being no indication of any shrinkage away from the platinum.

Now the matter of carving in porcelain work is much more easily carried on where the materials are very finely ground and allowed to dry; the material being of a much finer texture, a finer effect is obtained in carving than with the coarser materials, and I find that with Close's body, if ground finely, we get the same result in appearance that we do from the finely ground lower fusing materials.

In the matter of baking or fusing porcelain, nothing but experience will give a person the correct idea in regard to when a case is properly baked. There is in porcelains the same characteristic at the point of fusibility that there is in solders. No doubt many of you have noticed in soldering cases that if you have a solder that up to the fusing point seems to be inclined to be contrary, when it does flow it flows very quickly, and you will find the same characteristic in some of the porcelains, and especially so where you are using an electric furnace, for you must remember that in an electric furnace the heat is never maximum at the point of fusibility of porcelain. You never arrive at a point where the heat is stationary, it is gradually increasing, and for those reasons porcelains that have a slightly lower fusing point than others require a great deal more watchfulness and just a fraction of a minute will spoil the beautiful effect of perfect baking by allowing it to overbake. When cases are not brought up to the required heat and almost baked, you have a muddy or opaque surface which is not lifelike and desirable and the texture of it is, of course, not so strong. I think that the overbaking of cases in lower fusing bodies and enamels has a tendency to make them more or less brittle and there is more of a tendency to crack. Where you bake cases, putting the body on first and the enamel afterward, you should take extreme care in the first baking not to overheat the body, because if you give it a glazed or glassy surface there is every probability that the enamel that you place on afterward will have what we call enamel checks, and to obviate this, if you find that a case has been overbaked, it is well to grind the surface before you add the enamel and give it a granular surface. In single crowns you get a very lifelike result where you can have ready access to all of the surface by grinding the surface and polishing with sandpaper and cuttlefish,

but in bridge work and plate work it is an impossibility to get into the interstices between the teeth, so that it is not advisable to rely on finishing the work by any process of that sort, and for this reason great care should be taken in your baking of bridge work and plate work to get the proper heat and depend entirely on heating and fusing your material for the finish that it gives you when properly done.

The cooling of the work has very much to do with its strength. I think in this work too many pieces are checked by allowing them to cool unevenly, and I think the best plan to pursue is to close the furnace so that there is no possibility of any air penetrating, and allow the work to cool slowly and carefully, and you get all the annealing that is possible in that way.

Among the requirements for making this work a success, there is nothing so absolutely necessary as cleanliness. I have had some experience of that kind to-day, where soap and water were used for scrubbing a case and it was afterward pickled in sulphuric acid. The porcelain should never be touched with soap and water if it is going into the furnace again, because you are liable to leave some of the soapy nature of your washing compound with the porcelain, and if you do it will cause trouble. Sulphuric acid should not be used for cleansing purposes, except to clean the borax off, and always after using sulphuric acid you should thoroughly cleanse the case in boiling water, plenty of it and then treat the case to muriatic acid before baking. I have found the best results in repair work, especially full plates of continuous gum work that would come to me almost beyond the semblance of anything in the artistic way, by boiling them in a strong solution of potash, then boiling them for the same length of time in pure water and then leaving them an hour or two in the strongest solution of muriatic acid that I can get and afterward firing them, covered with a complete covering of plaster and asbestos, bringing them to a bright red heat. In that way I find that I can thoroughly cleanse the worst cases that have ever come under my notice.

We have much to thank Dr. Ames for in the way of solders and I have, since using the solders that he has furnished to the profession, had no hesitancy whatever in making partial plates soldering the teeth as I would in bridge work to the plate and fusing the porcelain on the lingual and labial surfaces just as

would in bridge work and reinforcing my plates by soldering together a thin layer of iridio-platinum, using probably thirty or thirty-one gauge for partial cases.

The matter of attachment for crowns and bridges has been pretty thoroughly ventilated at one time and another. All that I can offer on this subject from my experience is that dentists as a rule are too anxious to get deep caps over the ends of roots for attachments and in so doing they lose the possibility of artistic effect in the arrangement of teeth, oftentimes, and not only that, they weaken the porcelain structures of the work and I find that the narrow caps with the heavy anchorage pins of iridio-platinum are much more desirable, and you get a stronger piece of work, one where you have more latitude in arrangement and artistic effect and less liability to damage in placing in position, because you cannot always have the roots of the teeth as you desire, and in the matter of crowns for attachments, I use the seamless method of making the crown and then reinforce by filling in with platinum filings and using the platinum solder, and I find in that way I get a strong, serviceable crown without any detrimental effect by heating afterward. I have found in my experiments that with the exception of Johnson & Lund's porcelain, platinum solder, where we use eighty parts pure gold and twenty of platinum, will stand any heat necessary to fuse any of these porcelains.

A word or two in regard to furnaces may not be out of place here. I can simply give my testimony as grounded upon experience. I have had more service from a Peck electric furnace than any other kind of furnace I have ever used, that is, I have baked more cases, have had the furnace heated many more times without any mishap to the structure of the furnace. The Custer furnace has answered its purpose very well for me, but it has not the durability, to my mind, that the other furnace has, and I have not found that it would bake large cases so evenly as the heavier furnace.

As to the kind of teeth, I have often been asked what kind of teeth I preferred in porcelain work. The American teeth of course where high fusing bodies are used are absolutely necessary. I have found, on interviewing a number of my brothers in the profession, that they all have more or less trouble with a number of different makes of teeth having little black specks which are very objectionable and very annoying. I thought at one time that it was due to the investing compound used, but I found on

inquiry that it did not seem to make any difference what kind of material was used, the specks would appear in the teeth anyway. I thought that possibly it was because I used the gas blowpipe in doing my soldering, but I found on inquiry that some dentists soldering by other methods have the same result and the teeth that are the freest from this objectionable feature are the Consolidated teeth, and if you will take these teeth and examine them with the microscope you will find they are freer from that little imperfection than any other teeth I have examined. Of course I take a little different position in regard to the matter of continuous gum work than some of the profession who are present, and I wish to state here, and I think there are those present who can bear me out in this, that during the last three years I have used platinum from one-half to one-third as thick as formerly, and I have had better results as to breakage and repairs than I had before, when I used the heavier platinum. I was led into this conclusion by experimenting with plates without any platinum. I found I could bake a case on platinum foil and peel the foil off the porcelain and the plate laid on the floor and stood on by gentlemen who came into the office, would stand weight up to 175 or 180 pounds. I think Dr. York was the heaviest individual that I had stand on the plate and he checked some of the teeth, while the plate itself was not checked at all. So I made up my mind that the only advantage in the use of platinum was to get an accurate fit for the mouth for the continuous gum plate, and for that reason I have been an advocate of using lighter grades of platinum for this class of work, and I think in so doing, with the success that I have had so far, I have established one point in favor of continuous gum work, which is reducing its extreme weight, which has certainly always been an objectionable feature.

In regard to the matter of strengthening these thinner plates I have been asked why I double the plate across the posterior margin of the plate. It is not to add any particular strength to the base plate of the case, but simply to keep the plates in position when they were baking in the furnace. The only reinforcement that I do give is placed under the pins back of the anterior teeth and consists of a bar of iridio-platinum wire.

In reference to the manufacture of teeth there is only one little item that I can suggest to-night; it has been said a number of times before, and that is this: Manufacturers pay a great deal of

attention to the labial contour of the teeth and but little to the lingual. I find very often patients will object to the difference in the abutments of the first bicuspid and the cuspid teeth, and if you will notice teeth that are placed in the market, the cusps are of about the same thickness as the incisors, and when we come to the bicuspids, there is too much of an offset in the lingual, so that it is really an objectionable feature in the arrangement of the teeth and I think that there is not enough attention paid to the lingual contour of the teeth that are afforded us, and I called Mr. Justi's attention to that when he was visiting the city a few weeks ago, and he said they were trying to arrange to have a tooth on the market that would meet that objection.

There is one point that I intended to speak of in regard to the gum coloring which we use. Often we find that in baking the color is too strong; we can reduce the shade somewhat by heating again and heating a little more than the first time, but if the gum is pale, of course you have to add more, and in order to do this you get better results by grinding the surface a little before adding to the new material.

Another point that I have overlooked I wish to call attention to in the matter of grinding the teeth for porcelain work. You cannot be too careful in the materials that you grind the teeth with and in overheating the teeth. I presume you have all noticed how easy it is to get a flash of light in the porcelain when grinding it, and whenever you do that it is not fit for the porcelain case, because it will afford you more or less annoyance.

I thank you, gentlemen, for your attention and consideration in giving me the time this evening.

Dr. L. P. HASKELL: *Mr. Chairman and Gentlemen:* I must confess that when I came in here this evening, as I remarked to one of the members, I felt very much as I suppose a cat would in a strange garret. I was elected an honorary member of this society in its early days, but have not been in the habit of attending its meetings. Residing out of the city some seventeen miles, as a rule when I get through my work at night I feel like going home, and so I am seldom in the city to attend your meetings, yet, whenever I do, have always been interested.

In the discussion of this question, to-night, of porcelain, perhaps it would be well for me to give a little personal history, that may not coincide with the experiences of most of you. Fifty-four

years ago I commenced to learn dentistry in a dental office in Boston. My first eleven years in dentistry was engaged carving and mounting teeth for our own practice and the profession. In those days it was necessary for a dentist to know some things in addition to what he knows now. He had to prepare his own plate, melting and refining gold and making his own solder. Many dentists manufactured their own teeth. There was a limited supply and no regular dental depots. At that time dental goods were kept in drug stores. Jones, White & McCurdy opened the first dental depot in Boston, in fact, the first in all the principal cities. Plate teeth, plain and gum, were manufactured by Alcock and by Stockton. They were very good as far as they went, but nothing to be compared with the teeth of the present day. When Mr. S. S. White commenced the manufacture of teeth, having learned the business in his uncle Stockton's laboratory, there was much improvement and for many years the colors of the teeth were far better than they are now. The teeth were more translucent, and the more translucent the better the color, perhaps you are all aware of that. The more silex and clay there is in the material, the more opaque the teeth. In the course of time they deemed it necessary to strengthen their teeth by adding more silex and clay or kaolin, and the result was, they had not those lifelike colors which they formerly had. The same was true of Justi's; when they first commenced to manufacture the colors were better and the teeth more translucent.

My first eleven years in dentistry was devoted to the manufacture of carved mineral teeth in sections. Taking the coarse materials, feldspar and quartz, heating them red hot and putting into cold water to calcine, then breaking into small pieces and grinding in a large quartz mortar, twelve or fifteen inches in diameter, with a large pestle of quartz, grinding hour after hour until it was an impalpable powder. Then came the mixing of materials in proper proportions, coloring with oxides of minerals and preparing for carving. Those blocks were carved in sections of three, six in front and four in the posterior blocks. They were mounted on pins soldered to the plate, holes being made in the blocks, and the blocks fastened to the pins either with sulphur or a very low fusing solder, melted in the holes over a spirit lamp. Later on the teeth were backed and soldered.

About seven years later, in 1851, John Allen's agent came to

Boston to sell office rights for continuous gum work. I was one of twelve to purchase rights. The instructions of the agent who introduced the work were such that I said if followed out it would prove a failure. Within a year every one of those men had abandoned the work as a failure, and I have continued it until the present. Now, why the difference? In those days it was all gold work, except occasionally a silver plate, and many dentists were supplied by those who carved teeth with sets of blocks for which they paid ten or twelve dollars a set, so it made it rather expensive, and they said, "Here is a method of putting up a set of teeth much less expensive and very easy to accomplish," and they went into it. His instructions were, no backings were needed. The platinum plate was swedged, no wiring, no turning of the edge, teeth arranged, invested in asbestos and plaster, and the porcelain applied to the necks of the teeth on the lingual side and partially fused; the palatal surface was not covered. The investment was removed, and porcelain applied to the labial surface, and fully fused, finishing with the enamel. The trouble was there was not sufficient strength in the work to stand the strain of mastication. In one year's time every one of those dentists had abandoned the work. From my previous knowledge of porcelain work I said if this work is properly made it will prove a success. I commenced by putting backings on the teeth. Having nothing but plate teeth the backings were butted on to the plate, as is done on a gold plate. I made one or two sets in that way, and it occurred to me that it might be strengthened still more, and I soldered a strip of platinum uniting the backings. In the course of time, after the introduction of teeth made for this work, with a pin to turn down over the backings, I made continuous backings with a foot-piece resting on the plate, which I consider very essential. Simply soldering the pins to the plate is not reliable, as the shrinkage of the body is apt to displace the teeth. Platinum absorbs a great amount of gold, so that close joints in soldering are necessary. The continuous backing is made in three pieces, one covering the six anterior teeth, the other two the four posterior teeth, lapping over the cuspid. Later on I covered the palate with porcelain, which is very essential from an artistic point of view. It has always been my aim to make this work as strong as possible, and I think there is the secret of my success. To-day there is nothing that equals it; it is the only perfect full denture, when properly made,

that is put in the mouth. There is a great deal of this work put together, I am sorry to say, without any care or skill, as many put together a set of teeth on a rubber plate, in a careless and slip-shod way.

In regard to the thickness of the plate, I have always and shall always continue to use not less than twenty-eight gauge. The strength of a continuous gum set is in the plate. The foundation must be strong. The porcelain adds to the strength, but if any strain comes, the porcelain will be liable to crack. Of course, there are porcelain plates made without any metal at all, but those are high fusing bodies and very strong. I always double the heel of the plate. There are four or five reasons for it. In the first place, if the porcelain is extended to the extreme margin of the plate and at some future time there is some irritation there, it is necessary to grind away the porcelain for relief. By doubling the plate a quarter inch or less, you have plenty of room for relief without marring the work. Another reason for doubling is, it leaves the extreme posterior margin plate thin, and as the inner edge of the doubler is turned up slightly it protects the edge of the porcelain. It also adds to the strength of the plate. I wire the outer margin of the plate with a thick flat wire, strengthening the margin of the plate and making a much better finish. There is scarcely ever an exception to the rule that a plate should be worn higher over the cuspid teeth than elsewhere, and the artificial gum fuller than elsewhere in order to restore the contour of the lip.

I object to using various makes of material in porcelain work. Repairs come sooner or later, and, by the way, I want to say with regard to repairs, in all my experience I have had less repair of continuous gum work to do than of any other style of work I have put into the mouth, and it is not a difficult work to repair. I would prefer repairing a continuous gum set, I do not care how long it has been worn, or how much it is broken up, than to repair a rubber case. I do not boil it in acid, but invest it in asbestos an inch and a half deep, and place over a gas heater, bring the heat up very gradually for an hour and a half, until I get it as high as possible; when cool remove the investment and then it can be placed in the furnace with impunity, with little danger of cracking. This matter of repair is a comparatively simple thing when you once know how to do it. The use of so many different materials for porcelain work brings trouble when repairs come. You have a

piece of work that has been constructed of certain materials and fused at a certain temperature, and you know not what materials to use to repair it with. I prefer to use just one material. I am speaking now of continuous gum work, not crown or bridge work. I use Close's materials exclusively. Dr. Close was associated with John Allen in his earliest experience with continuous gum work, and it was really he who perfected the materials for the work. After putting up continuous gum work for about a year I was bothered very much with the material, sometimes working successfully and then again a new lot would give me trouble. It was about a year after I bought the office right before they perfected the material. Dr. Close told me that after they had perfected the material they prepared enough to supply the profession for twenty-five years. I would not have given a penny to have had any change made in the material, for I always knew how a case was coming out; had no doubt whatever as to the results. After twenty-five years' use the material began to give me trouble. Upon writing to Close about it he said, "The old stock is exhausted and I am preparing a new formula," and it was some six months before he had that perfected as it is now. It fuses at a lower temperature than the old material, but is thoroughly reliable.

With regard to this matter of crushing force as applied to a tooth, it is not very material; you do not get sufficient force on the crown of a tooth to crush it, but in continuous gum work it is a different matter. There should be as thin a porcelain surface over the palate as possible. It is not the crushing force that comes into question at all, it is the strain that comes on it in mastication. There was a time, I think about fifteen years ago, when I used thinner plates, to my sorrow. You must take the cases as they come to you for several years as a test. In putting dentures in the mouth you should endeavor to make strong work. I expect a set of this work to last at least twenty years, and have many lasting twenty-five years. Seven years ago, in Boston, I saw a lady patient who had worn, nearly forty years, one of the first sets I had made, and had never needed repair. You who have never had the experience cannot imagine the pleasure there is, if you have taste for doing anything in the line of artistic work, in constructing a set of this work. There are many points about it where you can exercise your taste to an extent you cannot in anything else you place in the patient's mouth.

With regard to colors in continuous gum work, that has very little to do with it excepting this, the body should always be yellow. A blue body, or a body that has no color in it at all, will not give a flesh tint; it must always be the yellow body. I presume some of you know that the gum color is composed of the oxide of gold and tin; I made it for many years.

With regard to fusing, my rule is, the first fuse is a light glaze; that gives pretty much the shrinkage that takes place. The second baking is necessary to restore the shrinkage. Wet the case thoroughly and apply the material very wet, jarring it into the cracks with the spatula until filled, and then restore what shrinkage has taken place and giving it the second fuse, which should be glossy; then comes the enamel fuse. I do not find any checking of the enamel in the electric oven. It is a little singular, too, that occasionally in the coke and oil furnace there was checking. I always put it into a cold muffle; the case is so hot when it goes into the cold muffle that it heats the muffle and both cool down together.

I have found for many years that Justi's are the most perfect teeth for this work that are made. With them I have no trouble from blisters, which occur in some other makes.

In regard to the matter of weight, I can say that through all my experience with this work, I do not consider weight a factor in putting an upper set of teeth into the mouth. If a plate is perfectly fitted to the jaw, and has fair adhesion, and, what is particularly necessary, properly articulated, the patient does not know whether it weighs one pennyweight or ten. I have never had to replace a set with other material on account of weight, and yet have had patients complain of the weight of a rubber plate, as, for instance, a lady who wore a rubber set for four years said, "I want something that is not so heavy." I placed a continuous gum set in her hands and she said, "I cannot wear that, it is so heavy." I said, "Madam, I will take all responsibility for the weight." I made the work and never heard a word afterward about the weight.

Dr. Thomas has referred to the matter of the manufacture of teeth. Often wide fronts have small bicuspids and molars, and vice versa. Bicuspids and molars too often have not sufficient masticating surface. Take the bicuspids and molars in rubber teeth, in the vast majority of them, even when they are three-

fourths of an inch long, how often the pins are near the end of the tooth, with a little short cusp. The pins could be placed lower down, giving a longer neck to the tooth, and would look much more artistic, and allow for grinding in articulating.

Dr. Thomas referred to the shape of the lingual surface of the cuspid teeth. They are always made concave, like incisors, instead of being convex, in the shape of the natural teeth. Now, that is one of the advantages of continuous gum work, that these teeth can be shaped like natural ones and the lingual neck of the bicuspids and molars can be contoured like nature.

With regard to gum color in fusing porcelain, I have been more troubled with the color fading than having it too dark. Sometimes the electric current is weak, so the case remains in too long and the color fades.

I have used an electric oven since they were first introduced. The Custer oven I am now using is the largest size; have used it since June of last year, and a wire burned out for the first time last week. I took it over to Germany and used it there, and I have used it ever since.

I saw, in London, a new furnace just brought out by the London Dental Manufacturing Co. It is called the Jackson furnace, and it is a small furnace with a muffle and door, with a sheet iron hearth. That furnace can be used with any current, direct or alternating; it requires no rheostat; it is a rheostat in itself; the current can be turned on quickly or slowly; there is very little liability of the wires burning out, and if they do are easily repaired. They fused a piece of the old Allen body for me in thirteen minutes. It comes nearer perfection than anything I have ever seen. It is sold by the London Dental Manufacturing Co., and the price there is $30.

Dr. W. H. TAGGART: I have only words of commendation for Dr. Thomas' remarks on this subject, and I will not have many criticisms to make, for several reasons, the principal one being that there is not much room for criticism; the other reason is that next month before the Chicago Dental Society I have a paper on this subject myself, and I will not dare give away all my points this evening. But the general remarks of Dr. Thomas were very much in keeping with the processes up to date, but he referred more particularly to the crown and bridge work, while Dr. Hasell's talk in opening the discussion was exclusively on continuous

gum work, which class of work has been conceded for years to be the proper thing. But the use of porcelain in modern crown and bridge work is something newer, and Dr. Haskell gave a pointer which is one of the greatest arguments in favor of the crown and bridge work when he spoke of the ten or twelve dentists in this city taking out a license to manufacture continuous gum plates, and at the end of the year all abandoning that process except himself. He saw possibilities in it for the future, if they were worked out properly. In the case of crown and bridge work I take that same stand. If I should have stopped with the failures that I made the first year or two I commenced to make porcelain crown or bridge work, I do not think I would have taken it up again. It got a black eye in the first few years of my own experience and also in the experience of many others. They say they tried it and failed: they tried one or two cases and it failed, and then they rejected it. I have lost quite a number of bridges, but I am very glad that I stuck to it, because every time that a bridge was broken I found that it was not because the porcelain was at fault, but because it lacked the underlying principles that were necessary, and that lack would have made a railroad bridge or any other structure a failure; and I kept at it until now I can say that it is four years since I have made a gold bridge or crown in any kind of mouth, so that I feel that the porcelain work is here to stay, and the few who have taken hold and have stuck to it will encourage those who have tried it once or twice and failed. Dr. Haskell says others failed with continuous gum work and he stuck to it and mastered it until we recognize to-day that it has strength enough for any use in the mouth.

There is always a great deal of difference of opinion whether to make a swedged rim to the plate or to wire the rim. I think of the two conditions the swedged rim is much neater and it is much more artistic after the plate is finished, and there is not quite as much work, to my notion. I always feel as though I have made a very grave mistake if I have to mutilate that edge to grind it after the plate is finished. I always consider that I have made a botch of the job if I have to do any grinding on the upper margin. I insist, whether the patient likes the process or not, that the patient wear that plate without the teeth on until it imbeds itself into the tissues; and it will do that without the teeth on in the course of a few days. If they object to wearing it in the daytime, I say, put

it in at night. If the patient comes back at the end of two or three days and there is any irritation, I turn it a little more to ease that spot off, and if there has been but a slight irritation and no irritation anywhere else, I do not care to have them wear it any more, but if it has cut into the tissues I turn it back a little more and then let them wear it, and if that place heals it shows that there is no special irritation in that place and then I go on and finish the plate, and as I say, I have not had, in a number of years, a case where I had to touch a margin after the plate was finished in order to get relief.

A MEMBER: What gauge do you use?

Dr. TAGGART: With regard to the thickness I am on Dr. Haskell's side. I have never felt much confidence in the thinner plates, in fact, the way I handle the plate, it seems to me that the trouble of keeping that thin plate in shape, especially while fitting it to the mouth, is one of its greatest drawbacks, and I really think that when it comes to the finishing of a plate, I take off as much platinum as Dr. Thomas has left on the plate. I think with the thinner plate, after you get it finished off, there is not as much strength as in using the thicker plate. Dr. Thomas' argument that there is no special strength coming from the platinum I think is true, but I feel that the necessity for it comes in the making of the plate and fitting it in the mouth and adjusting it and having the patient wear it as a plate before I put in the teeth; all that requires a thicker metal than he uses, so my preference is in favor of the number twenty-eight gauge.

Dr. GEORGE W. SCHWARTZ: I made a few notes on Dr. Thomas' paper as he went on, and first I wish to thank Dr. Thomas very much for his paper; it was an exceptionally good one. The first note I made was in regard to shrinkage from the metal. He gives a new pointer of painting it with silex. I would like to say, in the past I have always used a sharp instrument to scratch the metal surface with and thereby make a mechanical attachment to the platinum, because we all know that a smooth piece of platinum will not hold the porcelain as a roughened one will. He spoke of working porcelain dry. I always work it with a solution (?) which is the invention of Dr. Taggart, using a soft linen napkin to get the moisture out.

Dr. Thomas speaks of the way he cools the work. Well, in cooling it myself, I just take the work right out of the furnace and

put it on top of the furnace and let it cool in the air, and the best results I have seen in porcelain work have been done in that way. I was with Dr. ——— (?) six months, and I never saw him cool a case any other way, and some of the most beautiful porcelain work was done.

I have used the Peck furnace for almost a year, and used it hard. I do a great deal of baking, some for others and some for myself, and I have used the Peck furnace constantly perhaps eight or nine months, and I have never had trouble with it except two or three months ago, when I sent it to be repaired, and I expect to use it two or three years before I have any more trouble with it.

Dr. Thomas spoke about a fraction of a minute making a great difference. The first thing I do with a furnace is to test it. I put the two or three blocks of the same body that I desire to make up into the furnace with a pellet of gold inside; that is, I take a pellet of gold foil and put in the furnace so that I can look through the mica in the furnace and see the gold as it advances to the highest heat, and I watch the gold until it finally fuses, that is, from fifteen to eighteen minutes in a new furnace, and after that gold melts I time it five, six or eight minutes at different times. For instance, I time it five minutes the first time, and say, six or eight minutes at other times, until I find at what stage my porcelain is in the stage I want, and then afterward when I use my furnace I know just what time to give it, and I always time it by the watch. Dr. Taggart on his furnace has an ingenious arrangement in the order of a cut-off, with a clock, which does the work similar to the clock on the regulator.

Now about making the different tests with the gum enamel and the Close's body and whatever you will get, so that you can bake your porcelain in an absolute heat, I do not have so much trouble with the changing of the current as some have, but I tell you as the furnace grows older, there will be a change in the baking and you will have to watch and be careful of it. For instance if you note at a certain time your porcelain bakes a little quicker than it did before, you know your furnace is baking a great deal faster, and my experience is that the older the furnace gets, the faster it gets, and then you can make a test and govern yourself accordingly until the furnace burns out.

In regard to platinum for plates; at school this winter we have had a great deal of experience in continuous gum plates, that is

we have made a great many. My custom in making a plate in my own practice is this: I use a thirty-four or thirty-six inch gauge platinum, the softest piece I can get, work it up, find the lines in the mouth where I want to trim it, only I do not turn the edge (sometimes I do), then run a doubler between the cusps through the rim, what is called the toe of the plate, twenty-six or twenty-eight gauge, then I wire the case, and if it is a case where the patient has worn a rubber plate, or any other kind of a plate before that, I wire the plate in the back just as far back as I know they can wear a plate. If they have not worn a plate, then I put a doubler on as Dr. Haskell says, because you may want to trim for it, but where they have worn a plate, I feel that I can with a greater degree of safety wire the plate, and I wire it with a square wire and afterward file it to a-quarter round, and sometimes where I want to have the plate extra strong, I will also run a strip across the plate and back further on the plate; by soldering it up with gold it makes it a much stronger piece of work than if it is a single piece of work, because the soldering makes a stiffer plate, and the metal plate must be the foundation of it, that is true, but I have found just as good success after the process described such as made out of the heavy gauges, twenty-six, twenty-eight and twenty-nine inches, that are usually used. The weight of the plate has very little to do with it in my estimation, because when you take into consideration that the difference in the weight of a rubber plate and a continuous gum plate is a fraction of an ounce, it does not make any material difference, and if you have the articulation proper, you get the adhesion and it is adhesion that counts. When you find them say the plate is heavy and it does not drop down, you may know that that plate fits well, and it is the new feeling of the plate instead of the weight of the plate that they feel.

In regard to gum color, I find if you bake it you can get the darker color that way, but if you want to get a lighter color in the gum you bake it a longer time, and as a rule I do not grind a body. For instance, to get the pale effect in a gum, I grind it fine and bake it less.

In regard to the make of teeth, I agree with Dr. Haskell that in my experience the Justi teeth have been by far more satisfactory than any other teeth. I have not used the Consolidated, but I have used a great many of the others and have found that they come out with these little black pits, and it is very annoying.

Dr. J. E. Nyman: I always like to hear a practical paper from a practical man, and it has been with genuine pleasure that I have listened to Dr. Thomas this evening. I would not be a man if I should fail to show some appreciation of his high compliment to me in referring as he did to my paper. I can think of no more sincere compliment than such as he gave, coming as it does from a practical man who is working in this department day after day, month after month and year after year. If there had been anything radically wrong in my conclusions, I think he would have found it and called attention to it.

I cannot find fault with Dr. Thomas' paper in any regard. There is only one point on which I differ with him, and that is in regard to the make of the teeth best adapted for porcelain work. It is only because I have never used Consolidated teeth; I will not for a moment say that they are not as good as Justi's, but of the different makes that I have tried so far Justi's have given the most satisfaction.

A word in regard to the strength of body. As was shown by a little footnote at the bottom of my paper, I said I did not believe these tests showed the true relative strength of the different bodies, although I believed they demonstrated that the higher fusing bodies had more strength than the lower had. Now the cubes of porcelain that I tested were necessarily very small; they were three cubic centimeters in size. I was obliged to make them this small in order to be able to test them in Dr. Black's testing machine, which was the only testing machine to which I had access at that time. There was a difference in crushing resistance of about 100 pounds between those two small sections of Downie's and Close's, but I believe if cubes four times as large were tested, we would find a greater difference than 400 pounds between the crushing points of these two bodies. That is my opinion judging from clinical observations. I hope some time later to make further tests and have definite conclusions to report.

Now, the doctor was right when he said the finely ground bodies are much the best and they are really stronger than the coarser ground bodies and shrink less in fusing. All of these bodies have a certain amount of starch mixed with them; if it were not for that they would get dry and crumple to pieces. Brewster's body contains too much feldspar and too much starch, and those ingredients shrink more than any other ingredients.

In regard to fusing, a body of porcelain is just as strong if it is fused in ten minutes as in half an hour. In regard to the cooling, it has been my practice to leave the case in the electric furnace until all the light had died out, with not even a red glow appearing, then open the furnace and let it cool, and I have never been able to find that porcelain cooled slowly was any stronger than that cooled comparatively rapidly. On this question of overbaking, it is marvelous how short a time it takes to spoil a case; ten or fifteen seconds overtime will spoil the artistic effect of a case, so you must watch this very carefully. Another thing, the overbaking destroys all your fine carved lines, your cusps and everything else will disappear, it will bake down into a globular mass if the fusing point is carried too far. Again if it is too highly baked, you will find minute air bubbles in the mass. I do not know what that results from, I have not been able to determine it so far to my own satisfaction. Another thing, cases should be baked just as few times as possible. Try and have your furnace tested so that you know exactly to what point to carry that heat. Do not do any haphazard fusing. I find those black spots manifest themselves on some cases after they have been through the furnace three or four times, when, where they have been through but two or three times they were not noticeable.

In regard to the platinum solder that Dr. Ames has given us, it is quite the best one thing that has been given to porcelain workers within twenty years. It has been my practice to solder my bands with forty per cent, my caps with thirty per cent and the pin into the cap with twenty per cent. I just do that for my own ease of mind as much as anything else. When I come to solder my facings onto the metal work I always solder them with pure gold, because I find no difficulty whatever in getting actual contact between the pins of the facings and the metallic structure. I have found in soldering those on with twenty per cent platinum solder that so much heat was required that very frequently the delicate shades of yellow that we find in the necks of the teeth were either discolored or bleached out considerably. I avoid that now by soldering my facings to the metallic structure with pure gold. I carry the heat up until the gold fairly dances around the joints between the pins and the structure, and after you take it out of the investment you cannot detect any gold at all.

In regard to thin platinum plates, you can use thin platinum

plate and make a very much stronger case than by using heavy platinum plate in the old way, by reinforcing it at points where particular stress is exerted, and as a rule you make a much stronger plate than when you have a lot of useless strength of plate where no stress is brought to bear. By taking out the strength that was not necessary and adding additional where the stress would come, you can reinforce your plate and get it very much stronger than under the old method, and it would not weigh as much and be more easily swedged. If you put on the gum enamel too thick over your body, you will get a purplish tinge, no matter how often you bake it. Of course, the higher you carry it, the more you bleach out the pink tint in the gum enamel, but if you put it on too thick you will get a purplish tinge which is not at all natural. I showed a continuous gum case which I had fused, where I had put it on too thick, and the doctor said, "If I saw that in a patient's mouth I should say she was in a cyanotic condition." And it is the tinge that you see in cases of cyanosis.

The fault I have to find with most artificial teeth is that the molars and bicuspids are too narrow. They make up beautiful sets of teeth for exhibition at expositions and dental depots, but when you try to get them for practical cases you cannot find any of them.

Just a word in regard to what Dr. Taggart said about failures; I sympathize with him from the bottom of my heart. I have had failures enough to sicken my soul, but for every accident I have found a reason for it. There was a fault that was seldom the fault of the porcelain; often it was faulty judgment, because I had not experience enough, and then again just as often it was a case of faulty construction. The mechanical construction was not as it should have been. But it has been with porcelain work just as it has been with everything else, it is only by keeping everlastingly at it that you will win success.

In regard to electric furnaces, my experience has been just the opposite to that of Dr. Schwartz; I have found that as the furnace grew older it took longer to fuse porcelain, until finally the wires burned out altogether. When I first got my electric furnace I could fuse porcelain in nineteen minutes, and the time had to be extended until it took twenty-nine minutes to get the same effect. Shortly after this the furnace burned out.

Dr. PERRY: This is an all absorbing and fascinating subject to me. There is one point, however, that has been overlooked in

the discussion, and that is the use of continuous gum work in part plates. I have made two or three part plates recently. I use platinum and platinum iridium and platinum iridium clasps with the most marked success. I made a part lower plate of gold four or five years ago and it was a dismal failure, and the causes of the failure were inherent in the case; possibly it was inherent in me. The plate was held in the mouth by clasps on the first bicuspid on one side and second bicuspid on the other and the teeth were secured to the plate by means of rubber, but it was, as I said, a dismal failure, inasmuch as the second bicuspid upon the right side, the first bicuspid being out, tipped forward and made a three-cornered space between that and the cuspid teeth, so that it was difficult to apply or make a gold clasp case and make it satisfactory. This part plate made nearly all the landing or grinding surface that patient had in mastication. It bothered me a great deal, and so we decided to make this part plate of platinum and porcelain. I devitalized this tipping bicuspid tooth and cut it off and made a short platinum cap and set on it. The bicuspid tooth on opposite side was a gold crown that I had made some ten or twelve years ago. I made up my mind I would clasp it with the platinum iridium. I made a platinum cap over the cap, and then stuck a plate and set this second platinum cap into the plate, then when we come to setting the first time on the root, we simply set it into the plate, put the cement into that and set the plate into position and with the clasp on the other side, and by that means we secured the case in its place and secured the proper relationship of the crown or cap and clasp. We used facings and built up with the Close's body. We used a wire around the edge of the plate and a doubler on the lingual surface of the front teeth of platinum iridium, soldered with twenty per cent platinum solder. The plate went into place most beautifully. I must say that I never placed a part set in the mouth that has given me so much satisfaction. It was absolutely a complete success. I think this work can be used in part under sets, and part under sets supplying back teeth where we have to have a strong landing surface. Where it is made of continuous gum porcelain, made as this case is made, and secured as this was, I think it makes an artistic piece of work.

Dr. HASKELL: I want to say a word more. In the first place in regard to relieving the irritation of the posterior margin of the plate, the occasions have often been when a plate has been worn

several years, from some cause there is all at once undue pressure at the posterior margin of the plate. I rarely ever have to change a plate when it is new.

With regard to this matter of thin plates, I am surprised to hear any one say that a thin plate can be swedged easier than a thick plate, either platinum, gold or aluminum. I have swedged them all; I say a thick plate can be swedged more easily in my hands than a thin plate can. Another objection to thin plates is, unless the die is excessively smooth, you have all the inequalities of the die in the surface of the plate.

With regard to this matter of partial lower continuous gum, for many years I made them, but here is the serious objection to them. You all know that partial lower plates are eternally settling so long as there is anything left of the ridge, it is only a question of time. Sometimes within a year they shorten so that it will be necessary to lengthen them. I prefer some material where I can take off the teeth and set them up, and with a gold plate and rubber attachments that is easily done.

Dr. Ames: I would like to put in a word in regard to the Consolidated Co.'s make of teeth of which Dr. Thomas spoke. I have derived a great deal of satisfaction since I began using them. They stand the heat, they have a good texture which will permit of grinding and polishing and, what is the greatest consideration to me, I can go over to the depot with a certain ideal in my mind's eye and in a few minutes find it. When I go to places where they have a great many more teeth, I simply get confused and give up in disgust trying to find what I have in my mind's eye. I think I can start out with an idea of what I want and if it is in the stock and I find it, it is all right, but my trouble used to be that I would simply get disgusted by looking at a multitude of teeth the like of which never grew in human frame.

It is extremely satisfactory to have the gentlemen say that I have assisted them some by suggesting the use of the combination of platinum and gold as a solder. It occurred to me a few years ago that it would help us out of some of the difficulties, and I did not know but what I was the originator of the idea—I was as far as I was concerned—but Dr. Gartrell, of Penzance, I think published the idea a little previous to my conception of it, although I knew nothing of it until last winter when Mr. Pearsall visited this country.

I do not make very many continuous gum plates, but in the few I have made I like to turn the rim in preference to soldering a wire and I think I do this very much as Dr. Taggart would.

I would like to say a little about taking impressions, which will not be entirely off the subject, as it bears on this point. If, in an impression, we have the plaster flow up beneath the lip, against the cheek, over the buccinator muscles, and around the tuberosities, so that that plaster occupies all the space there is when those tissues are hanging in their natural position, we can exactly duplicate this plaster in the rim of a plate and have that worn comfortably, if we carry out the scheme in its entirety, having the plate properly retained. Now to get such an impression I find it necessary, if the patient has not an old plate to be used as a tray, I take the best impression I can with an impression tray, run a model, and over that form an Ideal base plate, carrying that up just about as high as, judging by the eye, the plate will be tolerated, a little scant if anything; then with that as an impression tray, allow plaster of the proper consistency to flow just up under the lip and cheeks and around the tuberosities and back on to the soft palate without displacing those tissues to any extent. Instead of trimming that model down close to the arch, leave all the surface intact which shows you the reflection of those tissues. If you leave enough of that, whether you are making a rubber plate or swedging a gold or platinum plate you can form to that surface and it will give you the proper contour for contact with the reflection of lip and cheek and all the muscles and around the tuberosities and then if you extend the plate across the palate where it can be made to impinge on the soft tissue, you will have a plate which is not held by capillary attraction only but you can use the entire atmospheric pressure available in a transverse section of the maxilla.

Dr. NYMAN: It just occurs to me, after Dr. Haskell's remarks that his objection would be obviated if he fastened the clasps upon those teeth after the most modern methods with lugs which will rest in the posterior sulci of the bicuspid which are generally tilted backward a little. A lug is fitted in there and soldered to the clasp, and that prevents the plate at that point from settling in the gum. If it should settle to the gum at the posterior portion it would be the easiest thing in the world to grind that off—the grinding surface a little—and carve up new cusps

to make the closest articulation wished for, so that I do not feel that that is a serious objection at all to partial continuous gum cases.

Dr. Ames: It occurred to me as Dr. Haskell was urging this objection, that it was the simplest thing almost imaginable to extend those teeth by fusing on body.

I wanted to say something about the test, or the means of getting at the proper fuse of porcelain. It seems to me, in the fusing point of certain metals inside of the furnace, we have the most exact scheme for getting at the exact fusion of porcelain. I biscuit Close's body at the fusing point of a pellet of gold; that may not be the best method, but it seems to answer the purpose. I fuse it at the melting of a fifteen per cent platinum and gold mixture. The timing never appealed to me. It seems to me the variation of the temperature of the room, a drafty room, might make a difference, but certainly the difference of starting with a cold furnace or a furnace in which there had been fusing done within the last half hour, would make a difference, and if you have your work in a certain position in the furnace and a test piece of metal in an exact position, when that piece of metal fuses that piece of porcelain is properly baked. A scheme I have worked out to a considerable extent is having a shunt current through a piece of metal just within the furnace and through a magnet which closes and opens the main circuit, as this piece of metal within the furnace burns out. It does away entirely with all watching of the furnace. When the furnace gets hot enough the test metal fuses, the magnet is rendered unoperative, and thus the main circuit is opened and all current cut out of the furnace. It is a nice matter to get the proper metal. Pure gold, which I at first expected to use, requires almost too much heat for the melting unless you extend it nearly to the center of the furnace. It is a matter of using either pure gold or silver or aluminum and locating it at the proper point in the furnace to have it fused at the heat in which the porcelain is properly fused. It can be worked, and it seems to me that this ought to be an exact method.

Dr. Taggart: In regard to the length of time for baking porcelain. There seems to be a tendency this evening to cry down the time method, that is, a certain number of minutes for fusing porcelain. I would cry that down too if we took into con-

sideration the personal equation. If a man pulls out his watch and says that wants to bake thirteen minutes and he is an exact man, he knows what thirteen minutes means. It does not mean thirteen minutes and a quarter. It means thirteen minutes. He will fuse his porcelain and get it right at thirteen minutes every time. Another man who is apt to come into his office five minutes late in the morning, and his patient is kept waiting, that man, when he comes to bake it thirteen minutes, will get it fourteen or fifteen minutes. Now then, if you will take the exact time of an alarm clock, so that when you set it at thirteen minutes it means thirteen minutes for you, thirteen minutes for Dr. Ames and thirteen minutes for myself, there is no personal equation at all. Your current is cut off there absolutely. Now then, some one might say the current varies. The current in the modern dynamo does not vary. They have put millions of dollars into the regulation of the modern dynamo. If it were not for that it would cost ten times as many millions to take care of the lamps. If they spend so many millions of dollars to get an exact flow of current through those wires, the chances are we cannot regulate it in a crude way. We cannot get anything more accurate, but we can get it in the number of minutes and number of seconds and in that way I have fused my porcelain for the last four years in the electric furnace, and I have fused it so that I do not have to vary it one particle. If, as time goes on and I find my furnace grows slow or fast, I will make an allowance for that particular case and so the next one I will bake ten, fifteen or twenty seconds longer or shorter, as the case may be. But you will find there is an accuracy that you can get by relying on time, not the time of your watch, but the time of an alarm that will shut off just at the second and you can get it every time.

Dr. NYMAN: It is all right to run a furnace *without a rheostat* on time. I do mine, but it is pretty hard to run these furnaces *with a rheostat* on time, because no two men will run them up at the same rate. For instance, to-day Dr. McCandless in using his furnace shifted the lever across the arc of the rheostat in about one-half the time that I have been accustomed to do, so that if I had been using his furnace by time I would have made a mistake. Then, too, if one should wish to use an electric furnace again before it had entirely cooled off he would be utterly at sea, if he were running it on a time limit only.

Dr. Schwartz: I would like to ask Dr. Taggart whether he has noticed that furnaces get fast or slow as they grow old?

Dr. Taggart: They are somewhat like human beings, I admit. There is one point I want to make about some difference in the same buildings in the time that it takes to fuse porcelain with the same Custer furnace or any other furnace, according to the distance they are from the central station. Now supposing a man is on the tenth floor and he gets the current pretty nearly direct; a man on the twelfth floor may take a longer time, but he may find out that there is some one on the eleventh floor that is taking a great deal of the current by burning many lights or running a large motor, so that when they tell you to fuse it at thirteen minutes, it means thirteen minutes for that individual office, so that whenever I have told dentists about the amount of time it takes, I say in my office it takes thirteen minutes, in another office it may be sixteen minutes, depending on the pressure in that office, so that each dentist must regulate that for himself, taking it as it is in his office.

Dr. Nyman: I find from 7 to 8 volts difference in the Edison city current. It is supposed to be 110 volts, and yet I have known it to run up to 115; I have frequently found it at 114; and again I have found it as low as 107 volts. This variation is not enough to burn out a lamp, and yet in a furnace it would easily make a minute's difference in obtaining the same degree of heat.

The President: I would like to ask Dr. Taggart if he finds the flow of current always the same in his office?

Dr. Taggart: Well, we have our own plant, but it is not quite as high a voltage as it was intended; it should be 110 volts, I think it runs about 108.

The President: Do you always find it about the same?

Dr. Taggart: Yes, you take a volt meter and put it into the circuit and you will find a volt meter fluctuates quite considerably several volts, but what it goes up in one moment it goes down in the next, so practically the number of heat units going through the wires is about the same.

The President: You mentioned a moment ago about the amount of current used on the floor below. I wondered whether that made a difference; certainly the time would vary, would it not?

Dr. Taggart: I have no doubt in such a case as that, as

rule those motors that take off a large amount of current are run pretty continuously, so that it would be a constant pull off this wire, not an intermittent one. The dynamo takes care of every lamp, practically; the dynamo responds to every lamp that is turned on or off and this is done by the millions of dollars that they put into the regulation of the dynamo, so that the immediate cutting off does not cut any figure, it is the constant pull that you have to figure with.

Dr. NYMAN: There is variation of the currents due to the condition of the atmosphere and also due to the condition of the earth as regards its exact electric potency, also due to eddy currents, due to induction, in spite of all they can do. Insulation not being perfect, there may be some escape, causing variation, but not enough to burn out a lamp. These fluctuations are more marked in large city plants than they are in individual plants in any one building.

Dr. THOMAS: Gentlemen, I have listened to the discussion with a great deal of interest, and I have very little more to add. I was a little bit amused by Dr. Haskell's remarks in regard to repairing the partial porcelain works after stating how much he enjoyed repairing the full upper continuous gum in preference to repairing the rubber plate. Less than three or four weeks ago I did just what Dr. Ames suggested. The plate had settled somewhat and I built up the cusps and bicuspids and molars with a little Close's body, and the case was just as artistic and serviceable as it was when it was first made. I have made a number of partial lower cases where we had bicuspid roots and molar roots for bases, making what some would style a removable bridge, but what I would designate as a partial lower continuous gum.

The point that I spoke of with references to the advantages that we get in porcelain work by reinforcing is something I do not believe you get the idea of. Some little time ago I had a gentleman come into my office to have a lower incisor replaced and he wanted it made on a plate, and the absorption of tissue owing to a diseased tooth was so great that it required a specially devised tooth, and I took advantage of using this solder and soldered the tooth as I would in a case of ordinary bridge work on a thin platinum plate reinforced with iridio-platinum and then baked the gums to fill in the space and made a very successful piece of work of it. I find in reinforcing it is a very good method to perforate the

pieces of metal that you use for reinforcing before soldering it on to the plate and having it on the side where you place the porcelain, it gives a strong adherence of the porcelain to the plate.

The matter of testing, it seems to me, is one that will admit of a good deal of investigation and ingenious experiment before we arrive at anything successful. Dr. Custer suggested to me a plan which he uses in his laboratory, which is simply a bare platinum wire reaching to a thermometer. The end of the platinum wire is coiled around the bowl of the thermometer, which is about two feet and a half from the furnace, and having the end of the wire stuck in the little opening at the back of the furnace, the heat imparted by the wire to the thermometer gives him a very nearly accurate idea of the temperature necessary.

Now this matter of watching different kinds of metal in the furnace for a test and, as some gentleman stated, watch the little pellet of gold in the furnace until it melts and then time the furnace, it seems to me just as easy to heat the furnace fifteen to twenty minutes from the time you put the case in, when you do not use a rheostat, and it is just as easy to watch the flowing of the porcelain as it is to watch the flowing of some metal in the furnace and then have to use a little time gauge besides, and I think a small, irregular mass of the material that you are using placed in the furnace, you open the furnace and look at it and you have got to watch the case very well if you want to be successful in the work. The minute that it begins to show any idea of smoothness and contour, your case is fused enough.

There was one point I forgot to mention, that I overlooked, and that is this: A great many dentists insist on having their work gold plated throughout. Now, we ought to educate our patients up to a point where a gilt veneer is not necessary. A platinum crown or platinum metal, where a little of it has to show in the mouth, is not as conspicuous as gold, and there is not any tendency to oxidize as there is in gold plating. It is almost impossible to keep gold plating from oxidizing.

Report of the Meeting of the Foreign Relations Committee of the National Association of Dental Faculties, Niagara Falls, N. Y., July 26, 1899.

The meeting was called to order at 2:30 P. M. by Dr. W. C. Barrett, Chairman. Present: T. W. Brophy, S. H. Guilford, J. D. Patterson and Henry W. Morgan, of the committee, and Dr. J. E. Grevers, of Amsterdam, Holland, Dr. Wm. Mitchell, of London, England, Dr. L. C. Bryan, Basel, Switzerland, of the European Advisory Board.

After announcing the history, objects, and work of the committee, Dr. Barrett began by inviting the members of the Foreign Advisory Committee to a free exchange of thoughts and ideas as to the best means of carrying out the objects of the committee, and Dr. Bryan gave an outline of the work, as he had been prosecuting it, in Switzerland.

There is a National Board of Examiners, composed of one from each of the five States where there is a university located.

This board examines and passes the papers graded to the president, who is appointed by the government. He figures up the averages, and sends his report to the board of those who are entitled to their certificate. This certificate carries with it a national character.

The dental colleges of Europe generally are about what were the colleges of this country eighteen or twenty years ago. They do not teach crown and bridge work, or modern dentistry at all.

How are you going to classify these colleges? Should a man be kept twenty years studying books preparing himself to enter the study of dentistry? After that, is he capable of handling instruments, or learning their use? And yet that is about the method pursued in most foreign countries.

As a general basis two years in a dental school in Europe is about equal to one year in a good American dental school.

There are fifty-two American graduates D. D. S. practicing in Switzerland, and thirty-six answered a circular letter, many of whom matriculated in October and went back in June, graduated. Many do not know anything of English.

Five different complaints have been filed with me of irregular practices, and all of which were against one school, and that most pretentious as to its requirements. The University of Berlin has a better school than have most foreign countries.

Dr. Grevers being called upon, said the condition in Holland is similar to that of Switzerland. In 1865 the medical boards were abolished and the title of arts degree was required. Very few of these graduates entered dentistry. A full medical course of seven or eight years is required. Between 1865 and 1875 only four or five graduates of arts were admitted to practice dentistry.

A special degree for dentists was established in 1875. The law required no preliminary education; only a dental training. The examinations were before the medical faculties of the four universities, under appointment by the government.

One examination is theoretical, and two practical. Five persons are appointed by the queen to conduct these examinations every year; three to examine and two as alternates. These are practical dentists.

The second examination is on local treatment of gums and teeth, and practical operations on the teeth and in prosthetic work.

The opportunities for learning dentistry in Holland are poor, and students generally go to other countries. The examinations are conducted in Dutch; never in the language of the candidate. In Holland the new law requires five years of study before the candidate can come up for the theoretical examination.

In Belgium, all persons wishing to enter the study of dentistry must hold a degree, and the law is in advance of that of Holland. There are no dental schools. Eleven American graduates D. D. S. are practicing in Holland, and five in Belgium.

W. Mitchell, of London, was called upon by the chair to report for Great Britain, and gave a chronological description of the growth of the ideas that eventuated in the American Dental Club of London sending the memorial to the meeting at Old Point Comfort in 1897. He outlined the active work Dr. W. E. Royce, of Tunbridge Wells, had taken in the matter, and his securing counsel's opinion as to how it would be possible to promote the bringing about of a federal dental diploma.

The speaker also gave an idea of the feeling in Great Britain as to the respective opinions of the public and the dentists as to the degree of D. D. S., and the feeling of the latter as to examinations in the United States. He analyzed the value of charges made as to laxity in the United States, and compared the facilities and results of both countries as regards the dental schools, and deplored the fact that no English journals had shown no desire

that the profession of that country should be apprised of this movement to elevate the standard all along the line in the United States in respect to dental education, thereby endeavoring to discount the bona fide work of the profession in the United States toward this desired end. He also discussed the facilities of the respective schools, and placed at the disposal of the chairman a dental register, and the announcements of the various institutions affording dental instruction, which showed that the course demanded in Great Britain was shorter than that demanded in many cases in the United States. He noted the fact that in the register of members of one dental organization in Great Britain, a Wisconsin degree was registered as one of the dental qualifications of the member registered. He also said that the greatest opposition to anything in the shape of a mutual understanding in respect to a reciprocal idea in the matter of dental degrees between Great Britain and the United States, came from those who did not take the trouble to travel and see and find out for themselves the facts in the case, and resented the information, and discredited it when furnished by those who did and who were fair enough to speak of things as they found them, and cited the July number* of the *British Dental Association Journal* and the discussions upon Mr. Booth-Pearsall's paper to prove it. He had hopes, however, as there were many young and progressive men who would not consent much longer to be held back by those whose ideas as to the present requirements of our profession were those whose only recommendation was interesting from their antiquity. He felt sure that many of the younger instructors were on the right track, but had much to put up with, and were hampered in their work by those of their older confrères who did not move with the times. He assured the meeting that the graduates of the respective colleges now practicing in Great Britain were heartily in sympathy with any movement that was for the advancement and upbuilding of our profession, either at home or abroad. He also spoke of a movement in England for a higher dental title, but was unable to say whether this included higher or more extended requirements, or only as a title or distinction.

A partial report from Italy was received, giving the names of American dentists practicing in that country. Also a brief statement concerning the dental status in Greece.

*Either June or July number.

Dr. Spalding promised a subsequent report on the dental schools of France. There is no hope of any immediate recognition of the American degree there.

Dr. Bryan made a statement of facts concerning the meeting of the American Dental Society of Europe, at Brussels, and his duties in relation to the Advisory Board.

July 27, 1899.

Dr. Mitchell asked for a list of schools advertising to sell diplomas.

Dr. Barrett announced that it was yet impossible to present such a list.

A communication from Dr. Ottofy, American graduate in Japan, was read giving a list of foreign and native graduate dentists; he asked that Japan be included in the work of the Foreign Relations Committee, and that an Advisory Board be selected for Japan.

Dr. Patterson moved that the members of the European Advisory Board in attendance at this meeting be requested to formulate some feasible plan for obtaining in this country any certificate or diploma which might be officially accepted abroad, or as an evidence of reputable graduation and good professional standing, sufficient as a qualification for European practice. Adopted.

Dr. T. W. Brophy moved that the chairman of this committee be instructed to introduce the members of the European Advisory Board to the National Association of Dental Faculties, and to request for them the privileges of the floor, and admission to its general session. Adopted.

Dr. Henry W. Morgan moved that so much of the report of Dr. Förberg as is general in its character be presented to the National Association of Dental Fadulties for its information. Adopted.

Dr. S. H. Guilford moved that the matter contained in the reports of the members of the European Advisory Board be digested, and a summary printed under the direction of the chairman.

It was moved that it be established as a rule that to hold a position as a member of the Advisory Board the nominee shall be a qualified practicing dentist in the country he is to represent.

Also, that the American degree be not considered essential, but that appointees should have an acquaintance with American educational affairs and colleges. Adopted.

The following appointments and nominations to the European Advisory Boards were announced :

GREAT BRITAIN—Wm. Mitchell, D. D. S., 39 Upper Brook Street, London, Eng.

W. E. Royce, D. D. S., Tunbridge Wells, Eng.

B. J. Bonnell, D.D. S., 94 Cornwall Gardens, So. Kensington, London, Eng.

HOLLAND and BELGIUM — J. E. Grevers, D. D. S., 13 Oude Turfmarkt, Amsterdam, Holland.

Ed. Rosenthal, D. D. S., 19 Boul. du Regent, Brussels, Belg.

C. VanderHoeven. —— —— —— ——.

SWEDEN, NORWAY and DENMARK—Elof Förberg, D. D. S., Sturegatan 24, Stockholm, Sweden.

S. S. Anderson, D. D. S., Christiania, Norway.

Vorslund Kjaer, D. D. S., Copenhagen, Denmark.

RUSSIA—H. V. Wollison, D. D. S., nominated.

Theo. Weber, D. D. S., Helsingfors, Finland. George Berger, nominated.

GERMANY—W. D. Miller, D. D. S., 30 Victoriastrasse, Berlin.

C. F. W. Bodecker, D. D. S., 16 Schluterstrasse, Charlottenburg.

Friedrich Hesse, D. D. S., Leipsic.

AUSTRIA and HUNGARY—Dr. Szigmondi, nominated.

Dr. Waeisser, nominated.

Dr. Arkovy, nominated.

ITALY and GREECE—A. T. Webb, D. D. S., 87 Via Nazionale, Rome, Italy.

FRANCE—I. B. Davenport, D. D. S., 30 Ave. de l'Opera, Paris, France.

G. A. Roussel, D. D. S., 74 B'd. Haussmann, Paris, France.

SPAIN and PORTUGAL—Dr. Portuondo, nominated.

Florestan Aguillar, Cadiz, Spain, nominated.

T. J. Thomas, D. D. S., Malaga, Spain.

SWITZERLAND and TURKEY—L. C. Bryan, D. D. S., 1 Steinenberg, Basel, Switzerland.

Theo. Frick, D.D.S., 14 Tonnenlenstrasse, Zurich, Switzerland.

Paul Guye, 12 Rue de Candolle, Geneva, Switzerland.

JAPAN, CHINA and BRITISH INDIA—Louis Ottofy, D. D. S., 87 Main Street, Yokohama, Japan.

AUSTRALIA and NEW ZEALAND — Alfred Burne, 1 Lyon Terrace, Liverpool Street, Sydney, N. S. Wales.

Dr. Elof Förberg's Report.

To the Chairman of the Foreign Relations Committee of the National Association of Dental Faculties of America:

First I must thank you for the flattering invitation to take part in the meetings at Niagara, as representative of the northern countries of Europe. It is with great regret that I am forced to decline, but different causes render it quite impossible for me to join you this year in America. I therefore take the liberty of sending in my report.

It was with much pleasure and approval I greeted the action of the National Association of Dental Faculties in appointing a Foreign Relations Committee, and read with great interest the report of the committee, and the different articles on the question by its energetic chairman, Dr. W. C. Barrett.

I have had many opportunities of witnessing the consequences of the action of fraudulent colleges here in Europe. How the American dental degree from being considered, a quarter of a century ago, an honorable distinction and much to be desired, has lost value and become in public opinion over here a mere nominal mark, since it bore the stamp of merchandise. It has indeed required a good deal of courage to carry it, thereby trying to raise its standard to the old position.

After having passed the examination at the Philadelphia Dental College with highest honors, and acquired the degree D. D. S., I returned to Sweden in 1876, expecting to enjoy the fruits of my labors and receive additional respect through the distinction I had gained, but these expectations were not fulfilled. The (I might say) war against that degree had just broken out in Germany, and soon spread over to Swedish ground. Not only the dental journals, but even the daily papers, contained accounts of the persecutions of American dentists in Germany, judgments forbidding them to use American titles, etc.

Being the first Swede who obtained the American dental degree, I stood alone and had to ride the storm as best I could, and defend my alma mater with all my power.

The attacks were directed not only against American dental institutions in general, the Philadelphia colleges especially, but even took more personal forms. Every means that was supposed to lead to the desired end, the prostration of the American dental

colleges and their supporters, were considered justifiable and used. After struggling for ten years I thought I had an opportunity of making the truth fully known.

In 1887 a young Swedish dentist intended going over to America to attend the Medical Congress at Washington. As he appeared worthy of support, I aided him in several ways, giving him introductions to prominent confrères in America, etc., hoping he would study the subject, and upon his return give a true and full account of the matter.

In consequence of one of the numerous efforts of the Swedish Dental Society, which during the last thirty years had repeatedly tried to make the authorities take the dental instruction in hand, that question was the order of the day.

Under pretext of studying the dental institutions of England and America, Mr. S. sought and obtained official aid, on the condition that he would give a report to the officials upon his return.

Well, in that report he was unjust enough to repeat what he had heard sub rosa from a dean, about his rival college in the same place, and on such superficial knowledge as he had gained in this and similar ways, to condemn, not only the American dental colleges, their professors and teachings, but also his confrères who had passed their examination and taken their degree from an American college, declaring their sole object to be title seeking!

And *that* report was delivered to the Swedish government and so got a semiofficial character; as it was also printed in one of the dental journals. (Mr. S. is at present editor of one.) I took up the cause and a wordy war began. I am glad to say I at last succeeded in silencing the slanderer, and as a proof after years of labor, have at length gained respect for the title D. D. S., which I hold to be an appellation of honor. I consider the fact that having the honor to be appointed dentist to the royal court, having been elected by the medical authorities member of the committee formed to arrange the Dental Department of the Medical University of Stockholm, and that I have filled the position of president of the Swedish Dental Society, and am still a member of its board, with their proofs of confidence from different quarters show that my labors, *pro bono publico*, have not been in vain. What I passed through has also paved the way for other young dentists who, after their graduation in America, have had no such difficulties to contend with.

Still, at the present time we may find articles like those I have already spoken of; as an example I supplement one (Rider No. 2) lately found in one of our daily papers. I proposed to my confrères here to form an American Dental Society, not only to respond at once, and thereby reduce such statements to their proper value, but also to protect our interests in general. But all our struggles will be in vain unless a radical change takes place in America, therefore we hail with joy the movement so auspiciously commenced by the National Association of Dental Faculties. I think you will see from the foregoing remarks how very necessary this movement really is.

Before entering upon the question of the work of the Foreign Relations Committee, I take the liberty of calling your attention to another source of harm to the American Dental Colleges, or rather their reputation. I believe much injury has been done to them by American dentists, some bearing highly esteemed names, who have unintentionally maligned the American institutions. Of course there must always be criticism; without it progress is impossible. What I want to direct attention to is, that Americans are fond of strong expressions, and directing their criticisms to American hearers and readers who well know the status of American dental instruction, they have not always sufficiently weighed their words and borne in mind that "words have wings," and that the envious of American institutions are ever ready to dissect their speeches, and those parts likely to help their own cause are sent out as "a criticism by the noted and renowned Dr. — on the American dental institutions." Per example, the above mentioned Mr. S. turned to account some rather sharp remarks made by one of the most prominent American dentists, and by the mere use of the quotation made by so noted a man, and still more an American gave additional force to his own words.

Dr. Barrett in a letter to me says: "It is absolutely essential that there be full and free consultation between members of the profession in Europe and America." This is the reason why I have dared here to call attention to this circumstance, which might be considered a detail, but which is certainly an important one.

When I received the news of my appointment as member for Scandinavia on the European Advisory Board, which I regard as a great honor, I considered it my first duty to try to make the true import of the movement fully understood. To that end I read

a paper on the question in the Swedish Dental Society, and also translated in full Dr. Barrett's excellent report. I enclose a copy of our "Transactions," in which it is published. With the same motive I also wrote to the presidents of the Norwegian and Danish Dental Societies, giving them an account of what was being done.

An old writer says, "Wherever there are men, there will be war," and this is very true, for all are ready to resent slights, real and imaginary, and are ever willing to take offense. The Scandinavians are not exempt from this failing, and the Norwegians especially are very ready to seize upon the slightest reason for complaint, and would certainly have felt neglected had you given them a Swede for a representative. I thought in regard to the matter in question, it should be provided that neither country have cause to complain, especially as the social and professional intercourse in dental circles, in one of these countries, leaves much to be desired. I saw but one means of securing the best persons to represent the countries in question, and that was to have the matter debated in dental societies, and so get a pronounced opinion. I consequently wrote to the dental societies of Norway and Denmark, asking them to elect each a member, the same to hold an American diploma from a recognized college, that member then to be proposed for nomination by the Foreign Relations Committee.

In this way the representatives would also gain a firmer footing among their fellow dentists, which, of course, is much to be desired. I duly received official answers from the said societies. The Norwegian voted for Dr. S. S. Andersen, the Danish for Dr. Vorslund Kjaer. Knowing these gentlemen personally, I can bear testimony to their high character; both are prominent men in the profession, standing high with their fellow dentists, and strongly to be recommended as fitting representatives of their respective countries on the Advisory Board.

I consequently take the liberty of requesting that the Committee on Foreign Relations would be pleased to nominate Dr. S. S. Andersen for Norway, and Dr. Vorslund Kjaer for Denmark, in the subsection for Sweden, Norway and Denmark, of the European Advisory Board. I also submit to the committee whether it would not be wise to elect a chairman for this, and every such subsection of the board, to receive the orders of the committee, superintend and be responsible for the execution thereof, conduct, correspondence, etc.

At a meeting of the European Advisory Board and the American Dental Society, in Brussels, I advised, and again beg to propose to the committee, that Finland should have a representative of its own on the board, of course under the subsection, Russia. Finland differs greatly from Russia proper. Since it once formed part of Sweden, it has a higher grade and advanced civilization. It has its own laws, even dental; its own language, in some parts the Swedish, in others the Finnish tongue being principally used; Russian is very little known by the population. For these reasons I think it is only just that Finland should have a representative, which of course would not prevent Russia having two or three, if found desirable.

If this, my proposition is acceded to, I would as representative propose Dr. Th. Weber, one of the leading dentists of the capital, Helsingfors, the only D. D. S. graduated from a recognized college, in Finland.

I have referred to Russia and Finland because Dr. Barrett thought me qualified to stand for these countries also, which have been hitherto unrepresented. As to the other European countries, they are outside my province. I therefore only remark, by the way, that at the meeting in Brussels, I voted for Drs. Miller, Hesse and Bödecker for Germany, Dr. Tanzer, of Triest, for Austria, and Dr. Aguilar for Spain.

We number in Sweden at the present time nearly 300 dentists, eight having the D. M. D. or D. D. S. from recognized colleges in America, three not here counted from unrecognized Chicago colleges. I enclose (Rider 3) a full set of these dentists' names and graduations. Their experience about the value of the American diploma is to be seen in supplemented report (Rider No. 1).

In Norway, out of 180 dentists, eleven have gained their D. D. S. In Denmark, out of something less than 200, five are D. D. S.'s and one a born American, Dr. A. W. Read. They are all reported to be satisfied with their position. In Finland, as before mentioned, there is only one dentist holding a diploma from a recognized American college.

As for Russia, I have tried, but failed to get reliable information.

All of the D. D. S.'s in Sweden practice on the strength of their Swedish diplomas as legitimate dentists. I have written and published in our "Transactions" a series of articles, on the History

of Dentisty in Sweden, from early times to the present, where we, principally through the indefatigable efforts of the Swedish Dental Society, have succeeded in advancing the dental instruction, so that it meets the most recent requirements, by the opening of a Dental Department of the Medical University in Stockholm.

I intended to give from these papers an extract, principally about the present legislation, but my report having reached unpremeditated length, I fear to take up too much of your valuable time, so restrict myself.

A mutual understanding as to the requirements preliminary to matriculation between American and European dental schools, with a view to mutual acceptance of degrees having been proposed, I will give an account of the preliminary requirements here.

Every one wishing to matriculate at the dental institution, shall present himself before the dean and produce certificate of birth, testimonials as to moral character, etc., from his clergyman, and certificate from a high school proving that he has passed his final examination, corresponding to the same in the United States. In this certificate he must have good marks in mathematics and physics, or have passed special examinations in these subjects.

The odontological examinations are two, one theoretical, or the dental candidate examination; the other practical, or the examination for becoming a legitimate dentist.

In the first, theoretical examination, the student is examined in chemistry, metallurgy, and materia medica, anatomy, histology and embryology, physics and physiology, general pathology and bacteriology. The final consists in partly verbal and partly practical proofs in the following subjects.

General and oral pathology, oral surgery and operative dentistry, operative technics and prosthetic dentistry, including orthodontia.

The course at the dental institute requires at least three years.

Only those who have passed these examinations at the dental institute may practice dentistry in Sweden.

In Norway, where there is not at present any dental college, the principal conditions for being admitted to examination are elementary school studies, study for three years with a preceptor, who is legitimated to practice dentistry in Norway, Sweden or Denmark, or in an officially recognized dental college that may be considered satisfactory.

A candidate who has entirely or partially studied abroad, must have practiced with a Norwegian dentist for a period of six months.

In Sweden, as well as Norway, legitimated physicians are allowed to practice dentistry.

In Denmark, since 1888, there is a school of dentistry. The student who seeks admission must have passed the "common preparatory examinations," or prove to have equal knowledge.

The "maturity" examination from a high school entitles to admission, but is not obligatory.

The student shall also have studied with a practicing dentist in Denmark at least one year before he is admitted to the school.

The examinations are two, the technical and the final. Before the student can be admitted to the technical examination, he must have attended a course of two following semesters at the school, and at least during two years, have studied with one or more dentists in Denmark.

Applicants who have not passed any of the above mentioned examinations, or who have passed equivalent examinations abroad, may be admitted to examination by special permission of the ministry.

License to practice dentistry may be expected only when the applicant, by references from responsible persons, can prove that he is of good moral character, has passed the above mentioned examinations, has reached the age of twenty-five years, or two years after his final examination has been clinical assistant to an authorized dentist.

Women in the Scandinavian countries have the same rights and privileges as men, in regard to the study and practice of dentistry.

In Finland, instruction in dentistry is given at the Medical Faculty of the Alexander University, and at the Polyclinic for Diseases of the Teeth.

The instruction comprises:

a. Preliminary examination for the medical degree, or the examination of candidate of philosophy, required for gaining a "learned" degree in the faculty of medicine.

b. Public examinations for the degree of candidate of dentistry, comprising examination in anatomy, physiology and materia medica, said examination to be held before the respective medical faculties.

c. Practical service during a period of eighteen months in a dentist's laboratory; of these eighteen months six months' service is required after the student has passed examination as candidate of dentistry; one year's attendance at the Polyclinic for Diseases of the Teeth; two months' attendance at the surgical clinic, and one month's attendance at the syphilitic clinic.

d. The final dental examination before the professor of the surgical clinic, the professor of the dental art and one legally authorized dentist appointed by the faculty, the last named to decide regarding the prosthetic and technical specimens of the candidates.

In Finland legitimated physicians are permitted to practice dentistry.

Dentists examined in Russia, having such knowledge and skill as is required in the empire for license to practice dentistry, may also practice in Finland.

In Russia, there does not exist any State institution for dental instruction, but there are private dental schools. The law rules that every matriculating student must have passed six classes in a high school "gymnasium." The course requires three years. After the final examination at the school, the candidate must pass a State examination at the university or at the Imperial Medical Academy. This examination may also be absolved after three years' apprenticeship with a practicing dentist. Dentists possessing diplomas from foreign universities or colleges, must pass that State examination before they are allowed to practice. It is said not to be very difficult to get such license in Russia.

By this short statement of the status of dental instruction in the countries I have to report about, it will be clearly seen that a proposal of mutual recognition would now meet with but little approval, at least in the countries where the preliminary requirements are as high as in Sweden and Finland.

Such mutual recognition may be highly desirable, but as far as I can see the question has been stirred up too soon. Such an anticipation may cause prejudice against the movement now going on in America, and thereby deprive the cause of many mighty and influential supporters here in Europe. If we expect to gain all at once, we may end by gaining nothing; the very best is often enemy to the good. Let us be satisfied with the good within our reach, and work for that, till we see a chance of gaining something better; it may be even the very best.

As the status is at present in America, every proposal about recognition made by an American college, even one recognized by the N. A. D. F., would surely be met by the question: Is your diploma recognized *everywhere* in the United States, and which European college do *you* recognize?

"Do to others as you would they should do unto you" is still the best rule. As long as a diploma from a recognized college in one of the United States is not recognized in another, it is too early to require mutual recognition in Europe.

The most radical way to meet this difficulty would be, without doubt, to follow the suggestion of Drs. Bryan and Royce, and have a *national diploma* granted by a national board of examiners.

This would, no doubt, be a difficult plan to carry out, on account of every State having its independent educational laws. This difficulty, though, ought not to be insurmountable. My opinion of American strength of will is too good to permit me to believe they would let anything come between them and the desired end.

One thing is very certain; it would be much easier to gain recognition for an American national diploma, than for one granted by private institutions. One of the accusations oftenest heard here is that the American dental colleges are not under the direct control of the government. Being private undertakings, dependent on the number of students gained, they are apt to become more or less commercial in character. This idea has become more and more fixed, since the public see men with little education, and still less professional knowledge, pay a short visit to America and return full fledged doctors of dental surgery.

In Europe it has been quite impossible to distinguish between reputable and unreputable colleges; owing to the results of the lax laws people judge all alike. This had gone so far that it required much courage to use the American title in Europe and defend its rights. The action commenced by the National Association of Dental Faculties and its Committee on Foreign Relations has been very much needed; without it the reputation of the American colleges would have been entirely lost. The National Association of Dental Faculties is to be congratulated upon the good work it has done, and it is astonishing that the Committee on Foreign Relations has been able in so short a time to carry out a successful suit against one of the fraudulent colleges, and has gained a repeal of the acts under which such colleges were incor-

porated, and so given rise to the hope that before long they will be things of the past. I think it the duty of every dentist interested in the standing and reputation of his profession to give his full support to the committee.

The establishment of the European Advisory Board seems to me a step in the right direction, and likely to prove a help. It cannot be expected that the deans of the American colleges should know every language, or have such knowledge of European laws as to form an opinion about all certificates presented to them by foreigners wishing to matriculate. It will require time and patient work to regain the reputation once held in Europe by the American diploma. Therefore coöperation between Europe and America is greatly needed.

Last, but not least, I would impress the necessity of enforcing the rules of the National Association of Dental Faculties, and having an equally high standard required for matriculation. In Europe we have always laid weight upon the higher education being necessary to enable the student to follow the lectures on such sciences as form part of modern dentistry, and the nearer all American colleges come to that point, the easier it will be to gain respect and recognition for their diplomas.

PROPOSED.

1. That Dr. S. S. Andersen be nominated to represent Norway.

2. Dr. Vorslund Kjaer, Denmark on the Advisory Board, Subsection Sweden, Norway and Denmark.

3. That Finland have its own representative in Subsection Russia.

4. That as such Dr. Th. Weber be nominated.

5. That a chairman be elected for every subsection of the board.

6. That the Advisory Board receive definite instructions.

(Signed) ELOF FÖRBERG, D. D. S.

RIDER NO. 1.

We, the undersigned, having experienced great trouble, on coming over to America for post graduation, to avoid the fraud colleges, which over here through advertisements make themselves most known, also to get our Swedish diplomas recognized by the faculties, and further to get our American degree ac-

knowledged and respected by public opinion over here on account of several dentists carrying unrecognized and even fraudulent American diplomas, wish herewith to express the hope that the movement taken by the Committee on Foreign Relations against the nonrecognized and fraudulent colleges will yet be a success, and prove a remedy for an evil that has long been the source of many an annoyance to reputable dentists, graduates of reputable American colleges, as well as endangering the good reputation of America and American dentists in general.

Well aware of the superiority of the well qualified American colleges of dentistry to those of Europe, we feel thankful to the committee for what has been already done and said on this subject, and beg the committee to feel assured that we follow its work with the greatest interest and give it our best wishes.

ERNST ARVEDSON, D. M. D.
ERNST GYLLANG, D. D. S.
MANFRED HAFSTROM, D. D. S.
GEO. FORSSMAN, D. D. S.
CARL SKOGSBORG, D. D. S.
ALBERT BERG, D. D. S.
ERICK G. AKERLUND, D. D. S.

To the Committee on Foreign Relations.
STOCKHOLM, in June, 1899.

RIDER NO. 2. AMERICAN DOCTORS. (Translation.)

A German court of justice has ruled that the use of an American doctor-title falls under the head "dishonest competition."

A dentist who had used his title of "doctor of dental surgery" has been declared guilty of violation of the law on illegal competition, since he, with regard to circumstances concerning his employment, made himself guilty of "false statements."

According to information received from the German consulate in Chicago, it is true enough that the "German Medical College," where he had "gained" his degree, is authorized by the State of Illinois to dispense certificates of examination and diplomas, in the same manner that any other commercial company which fulfills the formal stipulations for declaration, has the right to produce an article of trade. But the declaration does no answer the question whether the holder of such a diploma is entitled to practice in the State of Illinois or not.

The college is characterized in plain terms as a swindle, and is known to sell its diplomas at a certain price to any one abroad.

In regard to this information, the court of justice has stated that the accused had received his diploma from an institution that could not confer either doctorate or doctor's title.

His appeal against the judgment of the court gained no redress.

RIDER NO. 3.

The following is a list of Swedish dentists practicing in Sweden, who have secured an American diploma in the United States:

Elof Förberg, Stockholm, graduated at Philadelphia Dental College, Pa., March, 1876; Geo. Forssman, Stockholm, graduated at Philadelphia Dental College, Pa., 1883; Manfr. Hafstrom, Stockholm, graduated at Philadelphia Dental College, Pa., February 26, 1886; E. G. Akerlund, Stockholm, graduated at Philadelphia Dental College, Pa., March 7, 1895; Albert Berg, Stockholm, graduated at Philadelphia Dental College, Pa., March 7, 1895; Ernst Arvedson, Stockholm, graduated at Dental Department, Harvard University, Boston, Mass., June 26, 1895; Ernst Gyllang, Stockholm, graduated at Philadelphia Dental College, Pa., March 5, 1895; Karl Sandberg, Stockholm, graduated at Cosmopolitan Dental College, Chicago, Ill., November 29, 1897; Carl Skogsborg, Stockholm, graduated at Northwestern University Dental School, Chicago, Ill., April 2, 1897; J. Billing, Malmo, graduated at German Medical College, Chicago, Ill., November 3, 1896; Thjalmar Carlson, Grotsborg, graduated at German American College, Chicago, Ill., September 5, 1893.

STOCKHOLM, July 8, 1899.

CARL SKOGSBORG, D.D.S.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITOR: A. E. MOREY, PH. B., D. D. S.

LIBRARIES.

An esteemed correspondent in reply to a request for a historical article relating to the progress of dentistry during the century, says:

" * * I find writing up such matters is very slow work. I have had in hand for years the advent of porcelain in prosthetic dentistry, unable to complete it because I cannot find accurate information which I know exists, or has existed, that is essential to make the story complete. The same regarding amalgam. Who introduced it? When? A great deal of time and money spent upon that question simply proved that the man usually credited with its introduction *invented* it after it had been some years in use. I am now looking for several pamphlets published before 1820 that may or may not throw light upon it. Until they have been examined, or other reliable information obtained, the question remains open. Both these have an important bearing upon the century's progress in both prosthetic and operative dentistry. Getting this information is very uncertain; it is not, so far as I know, in any libraries accessible to me. I have to depend upon the old book dealers for help in such matters, and frequently have to send abroad. On this account, I rather hesitate to undertake such a task to be completed in a definite time. I dislike sending anything out knowing that it is not complete, that information unexamined may make a very material change. I will consider it, and if I can see my way clear to begin, with a prospect of completing the task, will let you know.

" I do wish that the dental profession would take more interest in collecting together, so as to be accessible, its scattered literature. Were your request for papers upon any phase of medica

practice, any thing regarding law, mechanics, theology, indeed, anything else under the sun but dentistry, I would feel far more confidence in promising to write them. I would know where to go to find the desired information; I could get the books, and I could get the assistance of those who have the books in charge in directing where such and such items were likely to be met with. Some time ago, after a long search to find who an old writer was, while at a medical library I asked the librarian if she had met with the name. She promptly replied, "We have his works here. I do not wonder you was unable to find him under that name. It is an uncommon variation of his name, as it has been changed by translation from one language to another." In a few minutes they placed before me half a dozen editions of his works, in various languages, some hundreds of years old. Every work I asked for they had. Now, when I want dental works of like character, I not only have to purchase them, but to hunt them up, or have them hunted up among the old booksellers of London, Paris or Germany; now and again, nearer home.

"Now we have got the college educational question settled, would it not be a good thing to stir it up a little in the interest of those who are in the profession; give them a chance of doing more reading, and give the well-educated young men who are supposed to be our successors a chance to keep up with the procession, going down to the past so as to have a firm foundation upon which to build their future; to know what has been known, and avoid wasting their time and strength over theories and practices long since discarded for good and sufficient cause. I wish, doctor, that the journals would take the matter up. A profession without libraries for the use of its members seems an anomaly."

A few years ago the Chicago Dental Society had a library and it was donated to the Newberry Library, which is located on the North Side of the city. In the whole city of Chicago the collections of books relating to dental and oral surgery are in the hands of half a dozen individuals, not accessible to any but the friends of the possessors. Will the city dentists and those throughout the State assist in beginning a dental section in the Public Library or the Crerar Library, or even get the Chicago Dental Society to do it?

W. G. A. Bonwill, M. D., D. D. S., died at Philadelphia, Pa., September 24, 1899, aged sixty-six years.

DOMESTIC CORRESPONDENCE.

Letter from Dr. Wedelstaedt.

St. Paul, Minn., October 4, 1899.

To the Editor of The Dental Review.

Dear Sir:—My attention has been called to the following statement, which appears on page 780, September, '99, Review:

"Dr. Wedelstaedt, of Minneapolis, (St. Paul) also read his paper entitled 'Cements,' in which was an attempt to prove by different mixings of cements, then placing in aniline solutions, that they all are porous to a greater or less degree.

"Very large (criticised as unwieldy) masses of phosphates had been mixed and placed in glass tubes to harden. The use of such chunks of material was a serious error. Some of the specimen glass tubes had varnish covering the cement at the ends, some had paraffine, some were left plain. They were all in bottles with aniline.

"Dr. Johnson was requested to remove the specimens from the aniline solution, dry, and break glass from cement and report the findings.

"*a.* Without varnish or paraffine showed considerable penetration by aniline.

"*b.* Treated with sandarac—penetrated partly.

"*c.* Those covered by hot paraffine showed considerable penetration by aniline.

"Various manufactures of cements were used. Dr. Johnson said that from his examinations there was not a material among them fit to use in the mouth."

I do not as a rule pay any attention to what is said by others in regard to the experimental work to which I may call the attention of the members of the dental profession. But when there is such a gross perversion of the facts as there is in the above statement, then it is time to say something. I feel very certain of one

thing and that is this: That the one who wrote this letter will be very greatly astonished at his own statement in regard to my essay, provided he will read it when it is published.

I did not "attempt to prove" but I did prove:

a. That when cement fillings were coated with alboline, it did not prevent the ingress of moisture.

b. That when cement fillings were varnished with sandarac varnish, the moisture penetrated just the same as if it had not been used.

c. That coating cement fillings with hot paraffine did not prevent the ingress of moisture. Thus, the theories that have been held up to us as law and gospel for the last twenty years were shown to be worthless and without any foundation. The fillings were not made in glass tubes, consequently their ends were not covered with the substances alleged. The entire fillings were, however, covered with these substances. If the writer of this letter had listened to the reading of my essay, he would have heard me say, "That these were not the only experiments made with this particular cement." The sample cement fillings were made large so they could be readily handled by those who examined them. They were purposely made the size they were, and it was not a "mistake."

I am always thankful for criticism, but I do not thank any one for criticising my work when he is entirely unfamiliar with what he is criticising.

Very truly yours,

E. K. WEDELSTAEDT.

FOREIGN CORRESPONDENCE.

LETTER FROM LONDON.

TO THE EDITOR OF THE DENTAL REVIEW.

Dear Sir:—In conjunction with taking a holiday, I thought perhaps a few points gathered on the way respecting dental affairs over on this side of the Atlantic might possibly be of interest to your numerous readers; that is my apology for forwarding you this letter.

First of all, it may interest you to know that the annual meeting of the British Dental Association, at Ipswich, was quite a success socially. There were no striking advancements noticeable either

in the theoretical or applied phases of our profession, but there was evidence among the younger members of a desire to advanced conscientious work, both as regards ground already gone over, as well as on original lines. This applies especially to the field of microscopy. This tendency is greatly to be admired and encouraged, for, from the very nature of the work, it will be the means of keeping them in an unprejudiced and liberal frame of mind altogether unknown to those unaccustomed to this kind of work.

One feature of the meeting worthy of mention was the paper read by Mr. Booth-Pearsall, of Dublin, illustrated by specimens of which the paper treated. During his visit to the States he ran across and saw enough to convince him that the educational methods from a dental standpoint possessed many features worthy of emulation, and showed the courage of his conviction by saying so, and backing up his statements by exhibiting specimens of mechanical work, the productions of members of the freshmen classes of the various institutions that he had visited. From the high position Mr. Booth-Pearsall holds in the practical arena of dentistry, there was probably no one present who could have presented the subject in a more able manner than he did. In the discussion that followed there was some very lively fencing carried on, prominent in this was a captious and carping critic (?) of everything American, who had visited the States about twenty years ago, and who imagined—judging from his alleged criticism—that dental affairs along all lines had done the same as he had during the interval, i. e., stood still, but of this belief he was disillusioned when Mr. Booth-Pearsall closed the discussions. It is a strange coincidence that this same obstructionist to dental advancement here should have treated with the same consistent courtesy (!!!) the cordial invitation of the French delegates to the British Dental Association, for that body to attend the dental meeting in Paris in 1900, that he did a like invitation to the Columbian Dental Congress in Chicago in 1893. However, the good sense of the meeting prevailed in this instance and sat down upon in no uncertain manner this erstwhile dictator, who will probably now seek the seclusion of oblivion that to any one possessing a finer sense of the eternal fitness of things would have readily suggested itself. I have it upon very good authority that this same person asked at a like meeting a few years ago "for a show of hands on the part of

those who considered crown work a legitimate part of dental practice." Comment is needless.

I am pleased to note in the dental journals here there is an apparent desire toward a better understanding in regard to the recognition of work done in the dental colleges in the United States. This is a step in the right direction and is as it should be, but these articles are hardly definite enough as to what they really mean; a definite statement would be very gratifying to the faculties in the United States, and would go further in the way of promoting a solid working basis between the two countries than will a lot of pleasant generalities.

One thing is certain, in the leading colleges in the United States, the preliminary examinations are quite up to that exacted here, while the *actual* requirements of the colleges in respect to their curricula is superior, both in respect to the facilities exacted by the faculties for teaching, and in respect to the *actual* time in the way of attendance required of the pupils at lectures, laboratories, and infirmaries.

Until quite recently, I must tell you, practical instruction in a well organized dental laboratory in connection with a dental hospital was unknown. This certainly was to be deplored. The dental department of Guy's Hospital was, I believe, the first here to take up this matter and put it to the test it had so long sustained in the United States. The results here, of course, were quite satisfactory to its advocates.

In this connection I would say that the London Institute of Dental Technology, the conception of Dr. George Cunningham, of Cambridge, and under whose able guidance it has been carried on for several years, is far in advance of any other institution here in the quality of instruction it affords the student of dental technics; and it must be very gratifying to Dr. Cunningham to note the positions attained by his pupils in the public examinations upon this subject. London University is being memorialized in respect to it granting a dental degree in connection with the amplifying of its charter now that it is going to be a teaching institution, as well as an examining one as heretofore. It is an interesting innovation to watch, as a large number of the profession here, who have been so conspicuous in deriding the D. D. S. have not for a long time been satisfied with what is only a license—the D. D. S.—but are now very clamorous for a *degree*. The present

qualification was arranged for dentists by medical men who created an anomalous or bastard condition which required taking the bulk of the medical course supplemented with as much dental instruction as was available, which resulted in only a good smattering of each, to the great disadvantage of dentistry. This, of course, was only to be expected where medical men dabbled as amateur legislators in matters they did not understand, and who were unwilling, and for that matter still are disinclined to allow dentists to look after their own affairs. There is at present a diversity of opinion as to the best way of bringing about the granting of a degree. Those interested in the welfare of the new school now being built in Leicester Square are not at all pleased with the proposition, for the instruction received there according to their present powers only pave the way for a license, whereas, should the London University incorporate in its amended charter the power to grant a degree, which as a *university*, it is likely to do, it is very easy to see with the superior teaching facilities that institution could command, where the students would go to. The opposition to promote the curtailment of its proposed power that this advance movement is receiving at the hands of those whose interests are identified with the halting and conservative schools appears to be the best evidence that a decidedly progressive change as suggested, is necessary. The more institutions of this caliber the better, then the survival of the fittest.

I wonder why it is that never has a word or comment been made during the past two years in any of the English journals in respect to the good work being done in the United States by the National Association of Dental Faculties through their Foreign Relations Committee toward removing what has heretofore been a reproach, *i. e.*, the faculties afforded for the graduation of English and European students applying for advanced standing in American colleges upon the strength of time put in either under preceptors or supposed representative institutions. It would be well if the various editors were to treat this matter fairly, for they leave no doubt as to their keenness to pounce upon any apparent delinquency on the part of any individual or institution if they are only in slight degree connected with "America." Probably one cause for this is their inability to differentiate between honest and competent practitioners, and those dishonest native charlatans who arrogate to themselves the title of "American dentist," and

who, in many cases, have never been beyond the confines of their native land and who resort to all the tricks, duplicity and subterfuges incidental to the pawnshops and "ole clo' " establishments from which some of them originally sprang. The honorable American graduate does not have to flaunt his degree or specialty before the public, for his practice is built up by the same steady process of merit as is that of the doctor or lawyer who succeeds in his special sphere.

As far as my observation goes—at least upon the continent—the graduates of American dental colleges have the best practices, and enjoy a very satisfactory social position, and it is just possible the same thing applies here, hence the desire to close the editorial eye to the better qualities of their American co-laborers, and to keep their readers in ignorance of what is *really* going on in the dental world beyond their own little circumscribed horizon. A little more generosity in this direction would savor of a better intellectual balance instead of showing a dwarfed and stunted bias that is as illiberal as it is untrue.

I find the Americans whom I have met over here as heartily disgusted with the disreputable methods of the advertising quacks —who to a man are natives—as the true professional native can possibly be, and it was through a movement inaugurated by the American Dental Club, of London, that the National Association of Dental Faculties took this work up, and that they are in earnest is shown by the good work already accomplished, and I sincerely hope that any help or assistance that can be afforded their representatives on this side by their professional colleagues will be done in no grudging spirit but in the common interest of advancing the status and public recognition of our profession.

Should I have time I will endeavor later on to give you a letter upon other matters I have noticed en route.

LONDON, September 16, 1899. VISITOR.

REVIEWS AND ABSTRACTS.

INTERSTITIAL GINGIVITIS OR SO-CALLED PYORRHEA ALVEOLARIS. By E. S. TALBOT, M. D., D. D. S. Cloth. Price $3.50. Published by the S. S. White Dental Mfg. Co. Philadelphia, Pa. 1899.

This is a book of 188 pages with 73 illustrations. Most of the illustrations are original and nearly all of them are full pages. That they illustrate conditions seen in man is disputed at the outset. To say that gingivitis in the dog or sheep resembles or is analogous to the lesions found in man calls for a very broad imagination. The author presents an epitome of the views of many writers in the chapter on history, but he fails to grasp the salient features of those who have written before on the subject. Wedl's work (page 211 *et seq.*) Boardman & Hitchcock's translation gives a better description of the so-called pyorrhea alveolaris than all the authors quoted but one, or even the one under consideration. Lefoulon and Maury have described this affection excellently well. Thos. Bell, Salter, Coleman, Bond (of Baltimore), Sewill, C. S. Tomes, Smale & Colyer, F. Dubois (Aide Memoire), Joseph, Auguilhan de Serhan, S. S. Fitch, Fox & Harris, Barrett and others, including P. Macarovici, have written so well that we are somewhat disappointed at the chronological deficiency of this work at the outset.

Any student of etiology and pathology with a well equipped library, having the requisite time, could make a much better showing on the history of pyorrhea alveolaris than is given in this work. A mass of material is thrown together with excellent illustrations but the conclusions are faulty because the author has not done the work in a systematic manner.

The illustrations are vastly superior to the text, and being made from the lower animals are satisfactory from that standpoint but they prove nothing so far as the disease in man is concerned The environments of man are so totally different from those o street or pound dogs, or domesticated sheep, or guinea pigs, tha we must consider this otherwise excellent work as failing to throw much light on the etiology or pathology of interstitial gingivitis It is stated (page 21) that the author stood on the corner of tw streets and examined 10,000 faces, and eighty-three per cent ha "jaws inside of the perpendicular line" Such looseness of obser vation in a scientific treatise we have not met before. If he exam

ined 120 faces per hour he should have stood on that corner more than eighty-three hours, and of what value would such observations have from a scientific standpoint?

The treatment of this disease is not based on a correct understanding of the observed causes. Treatment in this work is weak, bacteriologically speaking, even with Portuguese wooden toothpick carriers (why not Porto Rican or Australian?). This work is marred by the poor proof reading of proper names, which will, no doubt, be corrected in a second edition, if it is called for. The paper is good and the type clear and the size very unhandy. If you are interested in this subject you should buy the book, but not as a guide to treatment or as a history, as it is lamentably weak in both particulars. G. S.

MEMORANDA.

Dr. E. C. Kirk, of Philadelphia, was in Chicago in October.

Dr. L. P. Haskell and Dr. Yaut have returned from Europe.

Dr. F. F. Fletcher, of St. Louis, was in Chicago in September.

Dr. J. D. Patterson, of Kansas City, was a visitor to Chicago in October.

Dr. H. W. Morgan, of Nashville, Tenn., was in Chicago during October.

Dr. L. K. Fullerton, of Waterloo, Iowa, was a visitor in Chicago in October.

Dr. H. A. Smith, of Cincinnati, spent a few days in Chicago during the month of October.

Dr. W. C. Barrett, of Buffalo, was a visitor in Chicago during October, *re* the Foreign Relations Committee.

Dr. J. Y. Crawford, of Nashville, Tenn., was in Chicago during the meeting of the Mississippi Valley Medical Association.

Dr. W. E. Griswold, of Denver, was in Chicago to attend the meeting of he International Dental Congress Executive Committee.

Dr. N. S. Hoff, of Ann Arbor, Mich., has been appointed on the Paris Congress Committee for the U. S., vice Dr. Thos. E. Weeks, resigned.

We are assured that nearly, if not quite, two hundred representative American dentists will be in Paris at the congress to be held August 8 to 14, 1900.

About the most jumbled up lot of sections it has been our pleasure to gaze upon are those of the National Dental Association. See page 763 and tell us what you think.

Dr. S. R. Salazar, of Lima, Peru, class of '92 Chicago College of Dental Surgery, was married to Miss Bertha H. Southwell, of Lima, in February last. Dr. Salazar is doing well in the capital of our sister Republic.

Dentists are gradually being appointed to positions in State and semi-State institutions. The most recent appointment is that of a dentist to the Georgia Sanitarium. Dr. E. A. Tigner, of Atlanta, is the one appointed.

Dr. Chas. Rathbun, of London, spent a few weeks in Chicago in September. Dr. Rathbun is enthusiastic about the next International Dental Congress. Why should not England have the next exhibition—and congress, too?

James Lind, M. D., wrote in 1806 that the natives of India always rubbed their teeth up and down with "brushes made from the chewed ends of fibrous wood." This would be good practice now. It is much better than brushing them transversely.

Dr. L. P. Haskell has been in Vienna this summer and gave an address before the Austrian (Vienna) Dental Society. He was well received and was tendered a banquet before his departure for Paris. In Paris he conducted a class in the École Dentaire de Paris, which was very successful.

Formaldehyde, calomel and oxide of zinc is now used as a mummifying paste by a prominent St. Louis dentist. The proportions are probably equal parts of the zinc and calomel and sufficient formaldehyde to make a paste As formaldehyde evaporates rapidly it would need to be replaced often.

FIRST DISTRICT DENTAL SOCIETY OF ILLINOIS.

Officers, 1899: President, W. J. Adams, Knoxville; Vice President, T F. Henry, Streator; Secretary, A. G. Smith, Peoria; Treasurer, C. B. Warner Varna. Executive Committee: W. E. Mabie, Galesburg. Galesburg, nex place of meeting, last Tuesday in September, 1900.

My sincere apologies for not being able to contribute the final letter o the continued article on the proceedings of the National Dental Association'. meeting at Niagara Falls last August. Possibly your New York correspond ent will fill the gap this time, and I will conclude next month, D. V.

Yours sincerely,

"THE BOROUGHS."

NEURALGIA.

℞ Chloral..... 0.5
Menthol..... 0.6
Cacao butter..... 2.0
Spermaceti..... 1.0

—*Mayet.*

It is with sincere pleasure that we offer our felicitation to the dentists c France over the decoration conferred on M. Chas. Godon. By a decre from the Minister of the Interior, on the 14th of July, M. Godon was decorate

with the cross of the "Legion of Honor." This is an honor worthily conferred, and is a recognition of the stupendous labor of M. Godon during the past twenty years in dental education. M. Godon has been a prolific writer, and is the author of several books, besides being the actual president of the approaching Paris Congress.

A NEW DENTAL JOURNAL.

The Dental World is a new journal under the auspices of the Georgia Dental Society. It is edited by H. H. Johnson, D. D. S., of Macon, Ga., formerly editor of the *Southern Dental Journal*. This promises to be useful in the field where it is published. Probably more dental journals have been started in Georgia than any other State in the South, and we wish success to the latest.

URIC ACID DIATHESIS.

℞	Sodii bicarbonatis	grs. xlv.
	Acidi benzoici	grs. xv.
	Sodii phosphatis	grs. lxxx.
	Aq. bullient	℥ iss.
M.	Solve et adde:	
	Aq. cinnamomi	℥iij.
S.	Two teaspoonfuls three times daily.	

—*Golding Bird.*

TOOTH SOAP.

Talc	5 grs.
Magnesium carbonate	5 grs.
Orris root	5 grs.
Castile soap	5 grs.
Oil of peppermint	10 drops.

Mucilage of gum arabic, a sufficient quantity.

Mix the oil of peppermint (or whatever kind of oil is used as a flavoring) with the talc, add the other ingredients, all of the solids having been previously powdered, and make into a stiff paste, and set aside to dry.

OH MY!

Our esteemed and versatile friend, the editor of the *Dental Digest*, is worried in his September issue because the whole of dental journalism has not rushed to the front to indulge in talk about the recent crown and bridge case. As the organ of the Protective Association, *its* pages have *nothing* in the September issue relative to this case. As will be seen in the September issue of the DENTAL REVIEW, our New York correspondent gives all the facts in the case so far as known. *The American Journal of Dental Science*, for September, and *Western Dental Journal*, for September, republish the same article and perhaps others. What does the editor of the *Digest* want? In one month he says we are all knaves and dare not open our mouths, and the next he cries out that we are unethical, and do not lumber our columns with crown literature, etc. The crown case is not the whole of life, indeed it is a small part of it. After reading the editorial about the crown case in the

August number of the *Digest*, is it any wonder that a decent dental editor would keep silent on this matter? It is not pleasant to see from month to month tirades from the head of the Protective Association hinting that all virtue and honesty rests in him and the reverse in those who may differ from his view of things.

By all means join the Protective Association and get the benefits to be derived from membership. We belong to the association, and have for some years, but we do not go about bellowing that the head of it is dishonest or is incapable. On the contrary, we think he is the right man in the right place, we think that he will do all he promises. There is only one thing needed, however, that is a muzzle to keep him from snarling at his friends as he has been doing for several months.

NEURALGIA MIXTURE.

The formula for a mixture used for neuralgia in London is given by the *Chemist and Druggist* as follows:

Quinine sulphate	40 grs.
Ammonium chloride	6 drs.
Diluted sulphuric acid	2 drs.
Compound tincture of cardamon	1 oz.
Syrup	2 ozs.
Water, enough to make	20 ozs.

Mix and filter.

Dose: 1 tablespoonful in water every three or four hours until relief is obtained.

LEGRAND'S SOLUTION ANESTHÉSIQUE-HÉMOSTATIQUE

has the following formula:

℞	Gelatin. pur	2.0
	Sodii chloridi	0.7
	Acidi carbol. cryst	0.1
	Eucain. hydrochlor. B	0.7
	Cocain. hydrochlor	0.3
	Aquæ destill. ad	100.0

M.

The solution can be sterilized and kept for a long time without deteriorating. The technique of injection is the same as for Schleich's cocaine infiltration anesthesia. The special value claimed for this solution is the absence of a secondary vasomotor dilatation following the primary vasomotor contraction produced by the cocaine. Gelatine acts as the hemostatic.

WIFE CHOSEN FOR HER TEETH.

One of the most curious and interesting of bridal customs among the Eskimos is the practice of choosing a bride, not for her face, her figure or her fortune, but for the excellence and strength of her teeth, says the San Francisco *Examiner*.

Up in the polar circle, where a man's blood freezes and parts of him drop

off at the touch of the icy blast, it is a difficult matter to keep the untanned skins from hardening and cracking. There is only one process known to the Eskmo, that of chewing. It is necessary to perform this operation every two or three months, and it is a part of the wives' duties. It is for that reason that an Eskimo selects his future helpmates for the size of their teeth and the strength of their jaws. Of course one wife cannot attend to all the skins and so sometimes an Eskimo has as many as ten loving helpmates.

Wives are bought, sold and exchanged among the Eskimos. The price fluctuates like that of wheat or corn or stocks on Wall Street. A father with a growing daughter will be approached by a neighbor and offered one, two or three dogs for her, according to her maxillary powers. Sometimes a blue fox skin or a dozen strips of blubber may enter into the bargain, but dogs are generally the factor used.

NORTHERN ILLINOIS DENTAL SOCIETY, ELGIN, OCTOBER 18 AND 19.

Program—Papers: President's Address, Dr. C. W. Cox, Batavia; "The Predisposing Cause of Dental Caries," Dr. J. J. Reed, Rockford; "Cements," Dr. W. V-B. Ames, Chicago; "Fill or Crown, Which?" Dr. C. T. Dahlin, Elgin; "The Need of Dentists in Public Schools," Dr. Chas. Bentley, Chicago; "Dentistry in the '50's and Now," Dr. O. Willson, Aurora; "Chloroform in Dental Practice," Dr. F. A. Weld, Belvidere; "The X Ray and Its Application to Dentistry," Mr. ——, Chicago; "Square versus Round in the Preparation of Cavities," Dr. Robert M. Walker, Peoria.

Clinics: Surgical, Dr. T. W. Brophy, Chicago; Seamless gold crown, also the preservation of interdental space by the use of the Peterson matrix in amalgam fillings, Dr. E. C. French, Eau Claire, Wis.; gold filling, Dr. Richard Smith, Elgin; exhibit of porcelain work, Dr. E. H. Allen, Freeport; porcelain crown, Dr. Chas. Sowle, Rockford; extracting, using nitrous oxide, Dr. F. H. Robinson, Aurora; filling with Flower's new process gold, Dr. T. W. Beckwith, Sterling; a practical method of forming cavities in porcelain teeth, Dr. S. A. Whedon, Elgin; retaining partial dentures, Dr. C. R. Currier, Aurora, plastic gold filling, Dr. C. L. Smith, St. Charles; some other things besides replacing facings in crown or bridge, Dr. C. J. Underwood, Elgin.

UNION MEETING SEVENTH AND EIGHTH DISTRICT DENTAL SOCIETIES, STATE OF NEW YORK.

The thirty-second union meeting of the above societies will be held in the Assembly room of the New Osburn House, Rochester, N. Y., Tuesday, Wednesday and Thursday, October 24, 25 and 26, 1899.

Preliminary announcement: 1. "Cements," Dr J. H. Beebee, Rochester; 2. Subject to be announced, Dr. J. Wright Beach, Buffalo; 3. "Cosmetic Dentistry," Prof. Chas. H. Ward, Rochester; 4. Subject to be announced, Dr. W. A. Barrows, Buffalo; 5. "Treatment of Fractures of Lower Maxilla," Dr. Frank Greene, Geneva; 6. Subject to be announced, Dr. S. E. McDougall, Buffalo; 7. "Anesthetics in Dental Practice," Dr. J. F. Knapp, Geneva; 8 Subject to be announced, Dr. Preston, Buffalo; 9. "The Use and Limitations of Formaldehyde in Dentistry," Dr. F. W. Low, Buffalo; 10. Subject to be announced, Dr. R H. Hofheinz, Rochester; 11. "The Embryological Devel-

opment of the Dental Tissues," Dr. W. C. Barrett, Buffalo; 12. Subject to be announced, Dr. Leroy Requa, Rochester; 13. "Articulation," Dr. Geo. B. Snow, Buffalo; 14. Subject to be announced, Dr. W. H. Povall, Mt. Morris; 15. Subject to be announced, Dr. C. H. Nicholson, Rochester.

The committee in addition have under arrangement other important additions. There will be clinics in abundance, together with a complete dental exhibit. The committee are making strenuous efforts to make this one of the best union meetings ever held by the society and well worthy of your attendance. Members of the profession are cordially invited.

WM. W. BELCHER, *Chairman*,
827 Granite Bldg., Rochester, N. Y.

FOREIGN RELATIONS COMMITTEE NATIONAL ASSOCIATION OF DENTAL FACULTIES.

A special meeting of the Foreign Relations Committee was held at the Palmer House, Chicago, October 14. Present: W. C. Barrett, J. D. Patterson, Truman W. Brophy and Henry W. Morgan. After the transaction of some routine business and the formal approval of the ruling of the chairman in refusing credit for advanced standing on account of schools located in Japan and Mexico, until further knowledge of their course of study, and because of the absence of advisory board, to pass upon their credentials, the matter of the filling of existing vacancies in Boards already organized was taken up, and the nomination of Dr. S. S. Andersen and Vorslund Kjaer for Denmark, Norway and Sweden were formally confirmed.

The nomination of Dr. Theo. Weber, of Helsingfors, Finland, was appointed for the second place in Russia and Finland.

It was moved and carried that advisory boards for the western continent be appointed as follows: 1. Cuba and the West India Islands. 2. Mexico and Central America. 3. Venezuela, Colombia and Equador. 4. Peru, Bolivia and Chili. 5. Brazil and Guiana. 6. Argentine, Paraguay and Uruguay.

In the first division, Dr. R. R. Buchanan, of Ponce de Leon, Porto Rico, was appointed for the second position. In the fourth division Dr. S. R. Salazar, of Lima, Peru, was appointed for the first position. The other positions were left to be subsequently filled.

The chairman was directed to continue the work of the suppression of fraudulent and irregular schools, and he outlined his proposed course or procedure, which was formerly approved. The meeting adjourned subject to the call of its chairman.

STERILIZATION OF THE SKIN.

Senger (*Centralblatt fuer Chirurgie*, No. 27, 1899), investigating the value of alcohol as a disinfectant for the hands, finds that absolute alcohol will not destroy staphylococcus aureus in twenty minutes. The disinfecting power of this agent increases, however, as this drug is diluted down to fifty or forty per cent. After this the germicidal effect of the drug rapidly disappears. As a result of his experience, he states that a fifty or forty per cent solution of alcohol is a sure bactericide for the staphylococcus. If a mixture of alcohol and carbolic acid is employed the result is less satisfactory than

when alcohol alone is used, since a chemical combination results, with the formation of a kind of ether. A mixture of five per cent carbolic solution of ten, twenty or thirty per cent absolute pure alcohol is entirely inefficacious.

For three years Senger has employed a method of disinfection of the skin based upon his chemical studies. Two agents were employed which had the power of destroying the cocci, and which entered into a chemical combination which in itself is bactericidal. He employs first a two and five per cent warm solution of hydrochloric acid for two minutes, then a half to two per cent warm solution of potassium permanganate for one minute. The resultant brown discoloration of the skin may be removed in a few seconds by sulphurous acid. The action of the hydrochloric acid on the potassium permanganate causes among other things the development of free chlorine Oxygen and sulphuric acid are also formed.

According to Kroenig and Paul, a one per cent solution of hydrochloric acid with one per cent solution of potassium permanganate acts far more powerfully upon anthrax bacilli than a five per cent solution of sublimate. After bacteriological investigation the author has proven that a one per cent solution of hydrochloric acid at about the body temperature is an extremely powerful bactericide. Sulphurous acid and potassium permanganate are weaker. By means of this method he has been enabled to procure sterility of the hands in seventy-eight per cent of the cases. He commends this method as the safest and the quickest for thoroughly disinfecting the hands and the skin when infected with decomposed substances.

ODONTOLOGICAL SOCIETY OF NEW SOUTH WALES.

An informal meeting of the members of the dental profession of Sydney and suburbs was held on the 27th of last month at the Hotel Metropole, when it was agreed that it was highly desirable that an odontological society should be formed on the lines of a kindred institution which has been in successful operation in Victoria for some years past. The opinion was likewise expressed that the New South Wales society should be based upon the principles which govern the Victorian organization, namely: "A person shall be eligible for election as a member of the society, provided that he be of good character: that he does not conduct his practice by means of the exhibition of dental specimens, appliances, or apparatus in an open shop, or window, or in a showcase exposed to public inspection; or by means of public advertisements or circulars describing modes of practice, or patented or secret processes; or by the publication of his scale of professional charges."

The project was so cordially received that a provisional committee was appointed to arrange for a formal and representative gathering of the dental profession to be held at the Hotel Metropole, when steps could be taken to formally constitute the new organization. Accordingly this meeting was held last evening and the response to the invitation of the provisional committee was deemed exceedingly satisfactory, the leading members of the profession attending with the view of evincing their sympathy with the movement. Among those present were: Mr. E. Reading, Dr. Syme, Dr. Burne, Mr. Pedley, Dr. F. Magnus, Mr. E. K. Satchell, Mr. P. B. Reading, L. D. S., Mr.

Donald Smith, Dr. Hunter, Mr. C. A. Benbow, Dr. Hinder, Dr. Cliff, Dr. Spark, Dr. Rea, Dr. Carter, Dr. M'Taggart, Mr. H. S. Newton, Mr. Soderberg, Mr. Stephens, Dr. Elvy, Dr. Cottee, Dr. E. C. Bryden, Mr. Younger and Mr. Moon. Apologies were read from Dr. Belisario, Dr. R. Fairfax Reading, Dr. Bowker, Mr. H. Paterson, and Mr. Chaim.

Mr. E. Reading was voted to the chair.

After discussion it was decided to form the society under the title of the Odontological Society of New South Wales.

The election of office-bearers for the ensuing year was then proceeded with, and resulted as follows : President, Mr. E. Reading; vice president, Dr. A. Burne; honorary treasurer, Mr. E. K. Satchell; honorary secretary, Mr. Donald Smith; members of council, Dr. Syme, Dr. F. Magnus, Mr. P. Pedley, Mr. P. B. Reading, Mr. Soderberg, Dr. Hunter and Mr. C. A. Benbow.

The meeting then adjourned.

CONSTRUCTION OF ILLINOIS LAW AND DOWIE TREATMENT.

Until the supreme court of the State finally passes on the questions involved, more or less interest will attach to the reasoning of Justice of the Peace Everett, Chicago, in the case of the People of the State, for use of the State Board of Health, *vs.* Henricka Bratsch, which is reported in full in the *Chicago Legal News*, of September 23. The defendant, who was charged with practicing medicine without a license, was called to care for the wife of the prosecuting witness during her confinement in childbirth. The patient and the defendant were both members of the Christian Catholic Church, presided over by "Dr." Dowie. The defendant contended that she was not guilty of practicing medicine, within the prohibition of the statute, because of the provision therein that : "This act shall not apply to any person who ministers to or treats the sick or suffering by mental or spiritual means, without the use of any drug or material remedy." The imposition of a fine shows how the justice looked at it. He holds that the phrase, "without the use of drugs or material remedy," is pure surplusage, and that negativing the use of drugs and material remedies does not enlarge the affirmative protection accorded to mental and spiritual means, so that the latter terms shall include all means, except drugs and material remedies. Moreover, he says that the entire portion of the medical practice act providing that the act shall not apply to any person who ministers to or treats the sick by mental or spiritual means, is merely a declaration of what has always been the law, and would have been the law whether it was in the act or not. There is no question of the right of a man suffering from a disease to call in any system of treatment that seems best to him. And the adherents of this faith have a perfect right to treat disease or suffering by any means allowed by their faith—so long as those means do not encroach on the ordinary practice of medicine or surgery. But while praying a dislocated shoulder into place is, for example, permitted the justice holds that to pull it into place requires a license. So, had the defendant sat by the patient's bedside and merely prayed, placing her entire confidence in the power of God, he holds that her treatment would have been permitted, and the result would have been immaterial. But when, as the evidence showed, she prayed part of the time, and part of the time lent her strength to "assisting Nature," as the counsel styled it, giving directions to the elder and nurse who were also doing all in their power to assist Nature and finally used a pair of scissors to perform a surgical operation, viz., cutting the umbilical cord, the justice declares that he is satisfied she was placing as much reliance in her skill as a midwife as in her faith in God, and for the former, he holds, she required a license.

THE

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ORIGINAL COMMUNICATIONS.

A CHAPTER ON PLATE WORK.*

BY R. C. BROPHY, M. D., D. D. S., CHICAGO, ILL.

While the practice of dentistry, as a whole, has made commendable progress in improvement in the past, yet there has not been a record made in all its varied lines which absolves it from adverse criticism.

In operative work, while we are not afforded grounds for particularly adverse criticism, yet in this branch of our practice a study of the question must impress us with at least the thought that the excellence of results accomplished by the profession of to-day is not in keeping with, or in proportion to the advanced excellencies of modern facilities. Perhaps no better evidence of this is needed than the fact that we frequently meet with gold fillings in teeth of our patients, which were inserted years before, by practitioners perhaps long since passed away, and long before the now generally regarded indispensable accessories to successful operating were thought of; fillings which have perfectly withstood the test of time, which are, in fact, perfect specimens of operative art. When we consider the difficulties under which these old time operators labored, we can but wonder that such splendid results could have been accomplished by them, and we may well raise the question whether the average excellence of accomplishments in operative dentistry effected prior to the days of rubber dam and the many other advanced, modern facilities which we of the present enjoy, was not fully equal to the average excellence of accomplishments of the present.

In plate work we are confronted by irrefutable evidence that

*Read before the Odontographic Society of Chicago.

in this line of work present accomplishments are not on a par with those of our professional ancestors; indeed, I feel warranted in making the assertion that half a century ago the public received better service in the line of plate work than it is receiving to-day. I realize the harshness of this criticism, that it reflects seriously upon the credit of our profession, but that it is a deserved one I am firmly of the opinion; an opinion I find, moreover, to be shared by many others in the profession.

The ground for this accusation, the evidence which makes it tenable, is not mysterious or obscure; it stands out plainly, distinctly, in the fact that fifty years ago, or, to be accurate, forty-six years ago, or prior to the year 1853, the use of metal largely predominated in making plates, in fact, was practically the sole material used; but that at that time a substitute was adopted, a vegetable product, and that, to the everlasting discredit of the profession, as the young child reclines its head in perfect trust and self-relinquishment upon the maternal breast, so has our profession, in well nigh perfect abandon, subjected itself to the domination of this substitute. The profession of dentistry—full of well deserved honors for its grand accomplishments in enhancing the dental interests of humanity, for its achievements in the development of its science, and of its art in other lines—in tolerating with apathetic indifference the use of a material which it is well known by a large percentage of practitioners, and, indeed, by many without the ranks of the profession, possesses undesirable characteristics in excess of desirable ones, countenances the disfigurement of its lustrous record by a dark, unsightly blot, calls down upon itself severest condemnation. It is a common thing to hear members of our profession speak in most condemnatory terms of vulcanite base plates, and the baneful results frequently noted from their use, but do they go further? No! There their opposition ceases; not a voice is raised, not an effort made to correct the evil. It is clearly a case of toleration by the profession of a thing which, individually, it knows well is entitled only to reprobation.

The cause of this indifference to the use of a material which even did it possess a preponderance of desirable characteristics physically and chemically, would, because of its debasing effect upon the standard of skill which our profession as a claimant of the distinction of being a scientific body owes it to itself to maintain, is not easily determined. It would appear sometime

that it is the result of an exaggerated conception of the capabilities of our profession in prophylaxis. In talking with practitioners I have frequently noted testimony indicating quite complete abolition of this branch of prosthesis, and with the testimony a seemingly well defined inference that their patients had no use for artificial dentures. We perhaps have heard the young physician, when asked how he is getting along, answer, "Oh, first rate, I have not signed a death certificate since I commenced practicing." Are we to infer from this that at the hands and brain of this young man, death has suffered conquest? When a dentist makes the declaration that he does no plate work, or but little plate work, are we to regard it as evidence that there is no longer plate work—and much of it—demanded? There is much plate work demanded, and I do not believe that the profession of dentistry ever will attain to that high standard of skill in prophylaxis that will even lessen in appreciable degree that demand—certainly not preclude it. The historical fact that humanity is constantly degenerating in dental conditions, it seems to me, must be regarded as verifying this view. Another very potent cause in my opinion of the neglect of consideration of the subject of plate work by the profession, is that as soon as a man attains to that station of prominence which makes him an influential factor in molding professional opinion, he at once comes to regard it as undignified and a reflection upon his scientific attainments to call forth for consideration so ordinary a subject. As well listen for a crash of thunder from a cloudless sky, as look for a contribution from him on the subject in our current literature or before gatherings of his confraternity. He will write and talk profusely upon other subjects, upon this one he maintains dignified silence.

A moment's earnest consideration of the results of this neglect of the subject of plate work and the evils directly traceable to the use of vulcanite base plates, ought to inspire every man loyal to the interests of his profession with a determination to institute a reform movement. When the time comes—and I predict that it will come—when practitioners individually place a ban upon the use of vulcanite for base plates, and determine to confine themselves to the use of metal, then, and then only, will begin to vane the most potent influence serving to debase the profession to level with the trades; then, and then only will begin to disappear the influence most responsible for the maintenance of dental

sweat shops, the employment of child labor in dentistry, the survival in practice of "best set of teeth $5" dentists and the infliction upon humanity of perverse misfortune.

In so far as the effect of vulcanite upon the tissues is concerned, I wish it understood that I condemn it only in its application as base plates. I find no objection to its use where it is not held in direct contact with the tissues, by pneumatic pressure, or capillary attraction, which ever one of these two forces retention of plates is dependent upon. I concede vulcanite a place in dentistry, and an important place, in the attachment of teeth to metal bases, and various temporary uses, but I would rigidly bar its use where the evils resultant from its pronounced tendency to produce diseased conditions in the tissues is privileged to develop, a result known to follow only its use as base plates. Just why vulcanite tends to produce morbid conditions is a question which I shall not assume to answer. While I believe that its quality of poor transmission of heat, and specific heat, are potent factors in its incompatibility to the tissues, I do not know but that negative electric action is also a factor, nor am I sure that the poisonous ingredients present in its composition are not also factors. Having no positive knowledge on these latter points, however, I at this time offer no further comments, awaiting positive disclosures, which I hope will be forthcoming in the not very distant future.

I think no argument tending to show the importance of conductivity of heat in base plates, necessary. Taking it for granted therefore that this is fitly appreciated, I desire to submit the result of investigation I have made to determine the conductivity, comparatively, of vulcanite. I have used as a material for comparison alumino-silver alloy. I confess that in using this alloy, I was actuated by selfish curiosity, but I felt that the other materials in use, continuous gum, gold, and aluminum, being entirely satisfactory in the matter of compatibility to the tissues, disclosure of this property in this alloy might prove of interest to many.

My method of investigation may be considered crude, but I believe it practical if not elaborate. I constructed a cup of each material one and one-half inch in diameter, and one inch in depth and of a thickness of bottom and wall approximating the thickness of plates, the vulcanite cup, however, being much thinner than vulcanite bases are often made. I then made an asbestos cone six inches in diameter at the base and two inches at the apex. Over

this upper opening I placed a sheet of twenty-eight gauge iron. This cone I placed over an alcohol lamp, so regulating the height of the cone from the lamp and the flame, that a thermometer placed with the bulb in contact with the iron, held steadily a register of 98°, approximately the normal temperature of the body.

I then allowed the thermometer to drop to the temperature of the room (81°). Now I took each cup, alternately, and with the bulb of the thermometer placed in contact with the bottom of cup, I placed it upon the iron. A record made of the register of the thermometer at intervals of a half minute up to five minutes, is as follows:

Minutes:	..	½	1	1½	2	2½	3	3½	4	4½	5
Rubber:	81	81	81.5	82.5	84	86	88.5	91	93	95	97
Al.-Ag.:	81	83	85	88	91	94	98	..	..	..	..

It will be seen that at the end of three minutes the thermometer in the metal cup had regained the 98° register, while at the end of five minutes, through the rubber cup it had regained but the 97° register, or one degree less than the iron plate upon which the cup sat, thus showing the difference in rapidity of the transmission of heat through the two materials. Often repeated tests, made in varying ways, conclusively verified the accuracy of the record given and convinced me beyond further doubt that vulcanite through its sluggishness in transmitting heat maintains the tissues underneath it in a superheated condition.

Having finished our research to prove condemning qualities of vulcanite in the matter of conductivity of heat, I pass unconsidered other qualities bearing upon the adaptability of the material to use as base plates, questions which I believe, when solved, will show other condemnable characteristics, and will attempt to answer the anticipated question, "Well, if you think vulcanite should not be used for base plates, what would you use?" My answer is brief. I would revert to old time usage and confine myself to the use of metal. As to what metal, monetary considertions would govern. In my opinion, no denture has ever been devised equaling in all around excellence, continuous gum. For some reason the tissues of the mouth take more kindly to platinum than any other metal; but for this I would be wholly at a loss to account for the fact that the very objectionable proclivity of vulcanite does not also follow continuous gum, for it is well known that porcelain is a poor conductor of heat. It is an indisputable

fact, however, that inflamed, sore and diseased mouths, made so from wearing vulcanite plates, rapidly recover a normal condition when the vulcanite is replaced by continuous gum.

In my opinion, this is accounted for through the extraordinary compatibility of platinum to the tissues, offsetting the effect of the poor conductivity of the porcelain veneer. It seems to me that either this view must be adopted, or we must conclude that there is something about vulcanite besides its qualities pertaining to transmission of heat which acts deleteriously upon the tissues.

I would make continuous gum plates whenever I could prevail upon my patients to consent to it.

Unfortunately, the cost of this work is too often prohibitory. Some of us are not blessed with a wealthy clientage. We do not all occupy office rooms in down town palaces, from whose marble portals the inaffluent are turned by the imaginary reading of an inscription upon the bulletin board, "Office expenses in this building are high, and our tenants expect to get paid for their services in proportion." John, 15th chapter, 8th verse, reads: "For the poor always ye have with you." I mention where this quotation is found because I like the assurance it gives me that I will have at least one thing in my paper that will not be disputed. This Scriptural declaration applies to many dentists.

The poor man and the poor man's wife call for our service. Economy with them is essential, they cannot afford continuous gum. People of means, however, can, and I often think that many more of them would be made if the profession exerted the pursuasion that is due the work. Continuous gum work was introduced thirty-three years before vulcanite, yet the fact that notwithstanding its vast superiority its use to-day is infinitesimal in comparison with that of the latter, is to my mind evidence of professional indifference to excellence in this department, most deplorable.

Gold base plates are entitled to commendation. After these long years of use for this purpose, this metal, the mainspring of human ambition, the power which controls and governs the aspirations and efforts of all civilized men, the mother of avarice, the god of greed, the incentive of trusts, trusts of the poor that they may be able to occasionally see its color, trusts of the rich that they may be able to hide more of it away in their strong box, as a material of which to construct base plates, is beyond

reproach. Compatible in a high degree to the tissues, beautifully artistic in appearance and durable in the extreme, if properly constructed, too much praise cannot well be accorded gold as a material for base plates. In my opinion, however, gold plates should not be made—as they often are made—without rims to assist in retention of attachment.

Swaged aluminum bases, for the reason that such rims are practically precluded, I regard adversely. I believe it very important that vulcanite attachments should be securely tied in place by rims overlapping their edges. There is a disposition on the part of vulcanite to warp away from smooth metallic surfaces, particularly if the edges are feathered out thinly, which often cannot be avoided, thereby creating space for the accumulation of oral secretions and the propagation of bacteria. This warping should be prevented, and as the only practical preventive, well defined rims are indicated. Further than this I would criticise swaged aluminum bases only to this extent: While I believe that the metal aluminum is adapted to use in the mouth, I am convinced that the plate supplied to us is too often deficient in purity. In fact, I have found that many dental supply houses obtain their aluminum plate from ordinary stocks of commerce, quite regardless of the question of grade.

The purest grades of aluminum are obtained only from headquarters of production by special order, a requirement of time, trouble and expense too often avoided. My belief that the isolated cases in which swaged aluminum plates are acted upon by the acids or alkalies of the mouth are due to local impurities is supported by the fact that the changes effected in the metal are always in circumscribed spots. If the metal is subject to disintegrating or eating away effects of the oral secretions, why is not the effect general, or evenly distributed over its surface?

I now come to a consideration of a line of work in which it is known by many present that I am specially interested. I refer to metallo-plastic work. For a number of years I have persistently applied myself in efforts to solve the problem of successfully casting metal dentures with aluminum as the base of alloy. Never, from the time when I first became interested in the matter, did I doubt for a moment that the great array of failures charged to the work was other than the result of improper manipulation. Even in the face of the constantly recurring failures experienced by

myself, after years of effort, and until comparatively recently, did I lose faith in the ultimate success of some one in solving the problem. We are constantly having demonstrated to us the fact that impossibilities are proven but rarely in this wonderful age of development; and I never faltered, even when most heavily burdened with discouragements, in the belief that there must be some right way, some successful way to do this work. While I confess that I sometimes felt that the solution of the problem might be beyond me, I realized that if success is ever attained in anything it is attained only through perseverance; and this thought, coupled with a deep conviction that if vulcanite ever met a Waterloo, if it were ever to be superseded, metallo-plastic work, with aluminum as the base of alloy, would be its vanquisher and successor, inspired me to push on my efforts.

The results of these efforts no one can appreciate as I appreciate them, for no one can realize the numberless obstacles I have met; and now, while I feel that I have gained a mastery of the situation, I have no purpose to relinquish effort until I shall force from an incredulous profession admission that while Bean, and Carroll, Zeller and others fainted and fell by the wayside, yet success was in their path; that the end sought to be accomplished by those men was one of exceeding value to the profession and most worthy their effort.

I doubt if you expect or desire me to dwell at much length upon details of executing metallo-plastic work, and I shall not do so. I wish, however, to impart to you some general information concerning the character and scope of the work, in doing which I shall doubtless acquaint you in some degree with some of the steps in accomplishing it. First, as to the alloy used by me. As its name, alumino-silver, implies, it is an alloy of aluminum and silver. Not a new alloy by any means, but one that has been used by others long antedating my experience with it. In following up this work, I have experimented extensively in alloying metals, almost every combination having been tested by me which offered reasonable promise of desired qualities. The result has been a conclusion that aluminum with silver forms an alloy possessing more desirable qualities than any I have as yet known. In addition to my own experience, I have knowledge of the experience of others, tending to show that this alloy is well adapted to use in the mouth, undergoing no change from contact with oral secretions, possessing strength, etc.

While I shall continue in investigation of metallic alloys for use in plastic plate work, I am well satisfied that alumino-silver alloy will prove practical and successful.

Introduction of the metal into the matrix has proved a stumbling block in this work. The method first employed, that of Dr. Bean, wherein gravitation was depended upon to carry it down, was undoubtedly the correct principle, though improperly applied, no assistance being afforded to precipitate the metal through the bottom of the crucible at all, dependence being placed entirely upon the weight of the metal to force it down. Aluminum when first fused is an extremely sluggish metal, increasing in fluidity, however, from the fusing point, as heat is increased. Had Dr. Bean held his crucible under the influence of the flame until a proper degree of fluidity had been attained, and had then sharply jarred or jolted his flask, he would have accomplished the work successfully at his early day of original effort. The introduction of pneumatic force in casting aluminum alloys as practiced by Drs. Carroll and Zeller was an unfortunate step, upon which rests responsibility for the wholesale condemnation of this work; an entirely unnecessary proceeding, and not only that but a positively impractical one, it speedily engulfed in disfavor, and almost general abandonment, alumino-plastic work.

One of the most perplexing questions which has confronted me in this work has been the shrinkage of the material of which I made my models, and invested them in the flask. Until quite recently the element of positiveness as to the fitting of my plates was lacking, from this cause. I have, however, overcome this trouble, the compound which I now use assuring perfect fitting plates, provided, of course, the impression and model are properly manipulated in the matter of scraping.

The trouble also experienced in having the metal escape from the matrix and flask, is also overcome in this compound, there being insufficient shrinkage to admit of the moulten metal getting away from the channels and matrix. In no other work are such effective rims for retention of attachment applied, it being simply a matter of building your rims where, and as you want them, in wax upon the wax base plate.

For full lower plates some objection is offered to this work, on the ground of lightness. I am in the habit of using weighted rubber for my attachment, in these cases, and by so doing I attain

a weight that in my opinion is sufficient. For partial lower cases, where the anterior teeth are in position, and the ridge low, making slight bulk necessary, strength of material is very important. I know of no work equal to this in such cases, strength and rigidity being greater in proportion to bulk in alumino-silver alloy than can be found in any other material in use.

While I use and advocate vulcanite attachment of teeth in all full cases, and a large percentage of partial ones, yet I often cast direct to porcelain, it being desirable in many cases to be able to do so. We often meet with cases where the bite is so close that teeth with cusps cannot well be used. In such cases facings may be used, and the cusps cast in metal to occlude, or if the teeth be posterior ones, they may be cast entirely in metal. In case of breakage of teeth cast to plate they may be replaced readily by filing undercuts, or dovetails, and attaching with vulcanite.

It has been charged that the pins of teeth are affected by contact with the moulten alloy, that they become disintegrated, and weakened to an extent which makes possible the easy breaking away of the porcelain. This charge, so long as I followed the custom of heating my flask to the fusing point of the alloy, was true; but I have discovered that if I avoid heating my case too highly this result does not occur.

Adaptation to the form of the maxilla is a particular charm of this work. To swage a plate of any metal, where the conditions are most favorable, and have it conform perfectly to the alveolus and arch, owing to inaccuracies so liable to be present in the die, the result of double transmission from the impression is rarely accomplished; the plate may adhere, practically may fulfill every requirement, but absolutely perfect approximation is not present. This is true of favorable cases. If the case be an unfavorable one, possessing marked irregularities in the way of angles and undercuts, highly developed skill is demanded to produce successful results. In metallo-plastic work, this consideration is entirely obliterated. There is no such distinction as difficult and easy cases. They are all the same, and in all, proximation is absolutely perfect and true. In anticipating the futute of metallo-plastic work, I am conservative. As I have indicated before in my paper I prefer the use of platinum and gold in plate work above any and every other material, but, for that largely predominating demand for cheaper work, I am an enthusiastic believer that metallo-

plastic work with aluminum necessarily as its base of alloy, will yet weather the storm which has so persistently swept across its path, and merge into the calm of professional approval and acceptance, and that as its advantages, its desirable characteristics and the facility with which it is now demonstrated it can be performed, become generally known and understood, its use will rapidly expand, until vulcanite shall have received its just deserts in relegation to the restricted uses for which its properties and character adapt it.

Pathology of the Antrum.

By Geo. H. McCausey, D. D. S., Janesville, Wis.

It is supposed by the average student of morbid anatomy that the antrum of Highmore is an open book, yet it is a fact that its pathology is in general less understood than in any other territory requiring treatment by the dentist. It is a closed cavity with the one exception that it has an opening into the middle meatus of the nares. But scientific investigation has enabled us to ascertain its form, and also its structural elements, and while its pathology is in general no more perfectly understood than is its normal minute anatomy, it is in a condition of health, like all other tissues, a subject of little concern.

But, like tissues in other territories, it is subject to certain pathological conditions which have a more far reaching significance than is generally supposed.

The antrum, like other territories of the human anatomy, is subject to the inflammatory processes; and all pathological processes which affect it are, as a rule, the result of inflammatory action, either near or remote, and from various inciting causes.

Whenever there is no escape for pus, in cases of abscesses of the superior incisors and canines, and the abscess spreads in an upward direction, the osseous floor of the nasal cavity is the first to suffer. Its periosteal covering and its lining membrane of mucosa becomes the seat of inflammatory action, and it not uncommonly occurs that the pus makes its escape into the anterior nasal region and communicates with the incisive fossa. The perforation may be in the middle segment of the floor, and adjoining the descending lateral wall of the nasal cavity, the disease having

originated from a periosteal abscess of the lingual root of the sixth year molar.

Whenever there is extensive carious affection of the molar roots and accompanied by chronic inflammation of the peridental membrane and periosteum of the maxilla, the purulent infiltration also spreads within the osseous tissue and beyond the floor of the nasal cavities. Inflammatory affections of the mucosa of the nasal cavities attendant upon catarrh or fistulous ulcers are a more frequent sequence of chronic diseases of the teeth, and all the aforementioned conditions may be the primary cause of a diseased antrum.

We sometimes meet with cases where the lingual root of the sixth year molar covered by a thin bony layer projects upward beyond the floor of the antrum; or in other cases, the roots of both the sixth and twelfth year molars, as well as that of the second bicuspid, project within the antral cavity. Sometimes, but less frequently, protuberances are found, produced by the wisdom teeth or first bicuspids. In such cases it is not difficut to understand that, as a sequence of inflammatory action in the peridental membrane, and which has terminated in an abscess, the accumulation of purulent matter has given rise to an inflammatory infection of the periosteal covering, and finally of the lining mucous membrane of the antral cavity. The diagnostic symptoms of such a condition is a sensation of dull pain, the bone becoming at times sensitive under the slightest pressure. The cheek becomes swollen, and accompanied by the same condition within, and the outer integument presenting red spots.

This condition is termed empyema and is characterized by accompanying paroxysmal pain more or less severe. Should communication with the nasal cavity be interrupted in consequence of swelling of the mucous membrane, there will soon be found present within the antral cavity an accumulation of puriform mucus.

The molars and bicuspids on the same side will be found to have become loosened, and moved more or less from their normal positions, while the gums will be found to be both swollen and spongy.

After a time the facial wall of the antrum bulges to a considerable extent, and at the same time becomes thinned and shows a slight transparency. Sometimes the bulging may be

noticed in a direction toward the palate, or on other occasions in direction toward the orbit, and which generally occasions a deviation of the eye from its normal position. When from increased pressure the antral cavity attains increased proportions, the facial osseous wall will be found to have undergone partial resorption, and on pressure will exhibit a decided fluctuation. Sometimes the contained puriform mucus may escape through the nasal cavity from perforation, or with extraction of a root it may escape through the alveolar arch, and afterward the fistula may persist as a very small opening, but unless care is taken it may soon be occluded. A chronic irritation of the lining mucosa of the antrum leads to a thickening, followed by growths of connective tissue and various other new formations.

The Logan Crown—Root Preparation, Crown Alteration in Normal and Abnormal Natural Dentures.*

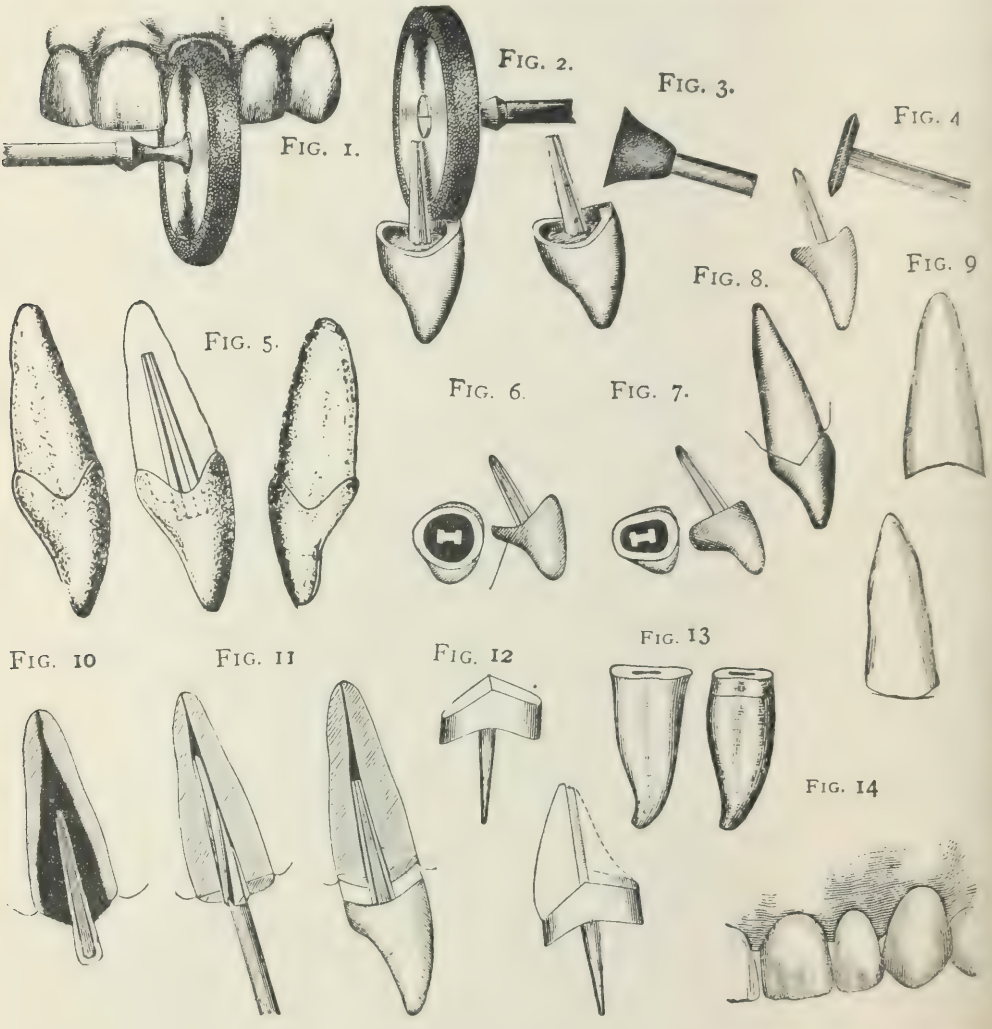
By B. J. Cigrand, M. S., D. D. S., Chicago, Ill.

Recent dental gatherings throughout the United States have reflected the opinion that there is still a disposition on the part of too many operators to employ the forceps whenever the dental organs present conditions slightly unfavorable for a filling, or a crown. The tyrannical reign of the forceps has driven many thousands into the slavedom of ill-health. There is much comfort, however, in the fact that a happier era is upon us, for the dentists who are members of National, State, or local societies are no longer guilty of extracting or crowning teeth which may be preserved by the agency of a perfect filling. Not only are the members of dental societies eager in their crusade against this form of malpractice, but the students at the several dental colleges are also earnestly laboring to become deserving of membership in a profession which hopes to save and restore the organs of mastication. The general public is gradually being educated to a full realization of the importance of good teeth, and the time is not far distant when "the loss of a good tooth shall bring sorrow to the entire household."

It is a deplorable fact, that too frequently the lateral or first bicuspid roots are extracted, and a tooth supplied by some

*Read at Southwestern Michigan Dental Society, South Haven, Mich.

system of bridge-work, as it is called; cutting down the sound adjoining teeth, collaring them with gold, when it was within the province of dental prosthesis to save the root, and place upon it an individual crown, such as would afford the natural denture with a hygienic substitute fully in accord with physiological laws. Nature scorns to be tied up, or confined, and the present systems of bridge-work with their yokes of gold chaining and enslaving one tooth to the other, are contrary to nature, and work ill results;



The above engraving illustrates some of the points in the paper "The Logan Crown—Root Preparation, Crown Alteration in Normal and Abnormal Natural Dentures."

more especially when the load is unbearably large, as in cases with a mammoth attachment carrying five, and even six artificial teeth upon two natural roots. How preëminently better to save the

roots of such teeth, and build them up and give nature the right to ask assistance, when occasion demands, and let her return the favor at suitable opportunities.

The individual tooth, as nature supplies it, is free from immediate support, the neighboring teeth approximate but are in no sense attached; they lend one another strength, in that they are positioned in an arch which demands that at the contact point of each tooth it shall touch its neighbor, and the teeth are so arranged that a strain that falls on any tooth of either half of the superior or inferior dental arch is communicated to the several teeth on that side of the jaw, and thus the major strain is broken. In some mouths there is a considerable space between the dental organs, and their approximate surfaces do not touch and in these mouths the alveolar ridge and the maxillary bones are so well developed as to hold the isolated teeth firmly in position. But the teeth as generally found by us, and as they normally ought to be, are slightly in touch, yet each as independent of its neighbor, in functional character as though the masticating apparatus consisted of but a single superior and two inferior teeth, or vice versa. To avoid employing assembled crown work in every instance possible, and to insert individual crowns instead, should be the earnest and indefatigable effort of every member of our profession.

The practice of positioning gold telescope crowns on laterals or any other tooth anterior to the bicuspids should be condemned, and practitioners who are truly conscientious cannot be induced to so violate the rules of esthesia or so disregard the natural denture. The all porcelain crown is preëminently the nearest representative of the natural tooth, and dentists who are not in a position to bake these crowns can employ the Logan crown to most excellent advantage. The Logan crown has not received the attention it merits, and I am certain if this crown is properly set—and I emphasize the word properly—I am convinced that it will be a decided success, both as to utility and appearance.

It is not my intention to delineate my method of placing into the tooth substance a band which I have chosen to call an "intradental band," as I believe many of you here are familiar with this system, but I will confine my remarks to the methods embraced in the title of this paper.

In setting the Logan crown, the first step is to grind off the remaining portion of the natural root below the free margin of the

gums. Some operators advocate the use of the bur in shaping and trimming the joint end of the root, but it has been my experience that the corundum wheel can be used with good results in the final trimming, as shown in Fig. 1. The wheel must be narrow, and of sufficient circumference to allow easy access to the root without the liability of interference with the adjoining teeth. Grind the root in such a manner as to describe a concave surface, the concavity being at the labial and lingual point, while its mesial and distal margins present an elevated ridge, as in Fig. 9. The tooth, by this method, is left with firm walls at a point where the strain is greatest and most likely to fracture. By thus shaping the root end you have not materially weakened the root, and you have made it possible to easily adjust and fit the Logan crown, the latter being beveled from the platinum post. Various sizes and shapes of corundum wheels are used in properly fitting the Logan to the root, as in Figs. 2, 3 and 4. When a large corundum wheel is used, as Fig. 2, the stone impinges on the post and often grinds it to such an extent as to impair its strength considerably.

There are many operators who advise us to trim the root like a chevron or roof, necessitating a counter shape to the Logan, and thus assuring the latter from rotation, as Fig. 5 shows. Many of our present day text-books advocate this method, claiming that crowns which are set in this manner cannot possibly loosen. In Evans' book on crown and bridge work we find Fig. 8, on page 66, and he describes it in these terms: "The obvious advantages of the device are the readiness with which the slope ends of the root end may be shaped with a file; the facility with which these slopes may be given any angle to set the crown out or in at the base, or at the cutting edge, or give it a twist at its axis; the certainty that once adjusted the final setting will exactly reproduce the adjustment; the assurance that in use the crown will not be turned on its axis—a most common cause of the loosening of artificial crowns."

Now, this reads well, and the pictorial side of the operation is excellent; but when you apply it in daily practice and observe where the strain lies in mastication, and you carefully study the outlines of the porcelain tooth, as pictured in Fig. 8, you will soon comprehend that this method is very faulty and exceedingly difficult to enforce in practice. In the first place, we have learned, by sad experience, that porcelain is strong only when in bulk, and

when employed in a thin veneer it does not endure. When the crown is constructed as here cited the lingual portion is very frail, and after grinding it to fit, as shown in Fig. 6, the crown has a split or bifurcated appearance, and has been weakened most decidedly. The comment made by Dr. Evans holds true when applied to Figs. 7 and 9, and when the root is thus prepared, and the crown fashioned accordingly, you have a perfect fit and a strong crown.

In order to get the best retention from a Logan, and afford greater strength to the root, I have found it good practice to follow the advice given by Dr. Ottolengui. After describing how he reams out the pulp canal, in Fig. 11, he adds: "A Logan crown may then be ground and adjusted on the root end and at the same time the crown post be fitted into the canal so tightly that, independent of the cement, the crown will have a firm hold on the root." This method of sparing root structure and giving additional anchorage to the metal post gains the approval of all who recognize the principle of force in mastication. Too many operators drill or ream out too freely from the canal, and leave a thin wall of tooth substance to carry the great strain and leverage of the Logan post. Fig. 10 clearly illustrates the general practice which prevails in anchoring the Logan crown. A moment's reflection will convince you of the shortcomings of this method.

In using the Ottolengui canal reamers, it is a mistake to employ a large one and produce a large circular opening into the root to receive the Logan post. Choose a small reamer, and by giving it an anterio-posterior movement you are enabled to cut an opening of an elliptical character, and you leave the root structure thick at its lateral sides, where the major strain falls, and where the root must of necessity be the strongest. Further, this rhomboidal opening allows the Logan post to tightly hug the walls of the root canal and thus afford additional anchorage to the crown.

It is evident that a crown set as here recommended cannot loosen or fracture the root unless the post first stretches, and this, I believe, is the cause of many of our crowns loosening. The primary cause does not lie hidden in this, however, but in a factor of which I will speak later. If the posts in the Logan, or in any of the full porcelain crowns, were made of iridio-platinum instead of pure platinum, there would be less likelihood of the yielding process, and the stability of the crown would be more assured.

After having given the root this special shape, grind and adjust the Logan crown to the root. Then select the proper sized trephine, place same in the handpiece, and with a few rapid revolutions of the trephine the intradental groove is produced. Now make a gold band, complementing the respective trephine stump on the gauge mandrel, and after soldering the band and trimming off the rough portions you are ready to set the band with cement. But before setting same, it is well to put a plug of cotton in the root canal to prevent the cement while attaching the band from filling up the canal. Mix the cement to creamy consistency, add cement to the two surfaces of the band, and register it over the trephine groove, then press it home. Let the cement thoroughly set, and with corundum stone grind the band even with the trimmed face of the root.

The next step in setting the Logan, so as to attain enduring success, is of great importance, and must be carefully executed. Place a sparing amount of oxyphosphate on the post portion of the Logan and paint the joint ends of the porcelain with a film of chloro-rubber, the latter being produced by adding chloroform to red rubber in a sufficient quantity to make a thick paint. Having thus prepared the Logan, and having protected the root from moisture, insert the post and gradually bring the Logan into the desired position. I frequently employ instead of chloro-rubber a thin band of gutta-percha, heating the crown with the latter and then applying the requisite cement. This method has been advocated for some time, and it has been shown that gutta-percha has all the properties necessary to withstand the action of the acids of the mouth, and as a representative agent against caries, even where every other material has proven a failure. I have found that chloro-rubber is fully as good and possibly better for this particular service, in that it can be handled with greater ease and does not become aged as soon.

The earliest reference I have been able to find regarding this method occurs in the *Dental Cosmos* of 1887, page 749, and reads: "Dr. Richmond usually takes a thin, perforated disk of gutta-percha, pushes the post through it, warms the crown, presses it into place, and when cooled removes the crown, and with a sharp knife trims away the gutta-percha close to the crown neck. He then warms the crown, puts a very little oxyphosphate cement on the post, and presses the crown home."

I have had excellent results during the past four years, since I have employed chloro-rubber in combination with the cement, and I hope to emphasize the necessity of sheltering the cement by some agent congenial to the oral tissues and capable of resisting the action of lactic and hydrochloric acid.

It is very important that we give careful attention to the manner in which we mix the cement. If we hope to perfectly anchor the crown, we must be certain to incorporate a liberal amount of powder into the mixture and stir rapidly, since the fluid with but a sparing quantity of powder cannot endure a strain. Even the temperature under which the cement is formed has much to do with the strength of the cement. Cement gives the most favorable results when mixed in a temperature of 75° F. Dr. Hesse, of Germany, recommends that we mix the cement on a bottle having four flat surfaces, and fill the bottle with cold water in hot summer weather, and hot water in cold winter weather. During the extremely warm weather I have resorted to this method, and am decidedly pleased with the good results; prior to learning this simple method, I used a porcelain slab in summer, and a block of enamel paper in the winter.

This matter of the consistency of our cements has more to do with insuring durability of the crowns than we now think. Strange as it may seem, we have learned that cement fillings which are put into cavities during extremely hot or severely cold weather do not prove to have enduring qualities, and this must be the case with Logan crowns, which are set under like circumstances. A sparing amount of powdered borax added to the cement mixture will cause the latter to set quickly, and give a hard and more tenacious cement product.

It has been advised by some to band the Logan, and by this means assist in strengthening and retaining the crown. Fig. 12 is a reproduction of a crown receiving a "circumdental band," and it is unnecessary to call attention to the injurious results accompanying the use of so wide a ferrule; and the circumdental band when anchored on a root should receive preparation, as Fig. 13 demonstrates the imperative reason for this step, and when this treatment is discarded the crown will prove a most discouraging failure.

The ferrule which all operators now produce to surround the necks of the teeth I have designated as the "circumdental band,"

such as we have on the Richmond crown. Practitioners have recognized long since that the circumdental band is not an ideal appliance, and that it has features which make it undesirable, and among these demerits we chronicle that it obstructs the intradental space; that it impinges on the living tissues; that it is unsightly and contrary to dental esthesia; that it induces pain; that it is easily broken; that it generally affords lodgment for food, and in turn harbors pathogenic organisms.

Notwithstanding that the Richmond crown is an esthetic dental appliance, there are innumerable defects which induce us to look about and design new ideas, in the fond hope of obtaining a crown which may approximate nature and yield hygienic and physiological results equal to the demands of nature.

In assembled crowns, as we should call bridge-work, we must admit that the Richmond occupies a place which cannot be substituted by any of the several crowns now in use. This fact is due primarily because it is a combination crown, constructed of porcelain and gold, the latter acting as a medium to which can be readily soldered the adjoining artificial teeth; but I am of the opinion that porcelain dental art will in the near future be in full possession of the domain now controlled by it.

There is one other feature of the Logan crown which receives too little consideration, and this is the shade selected to match the natural teeth. Invariably the Logan is entirely too light in shade, and consequently attracts undue attention to it as a dental artifice. We must remember that, "It is true art to hide art," and it is our mission to reproduce nature, in some cases, even when this divine product is crude and abnormal. Better results can be attained if we choose a tooth somewhat darker than you first conclude—artificial teeth always appear lighter when placed in the mouth where the tissues lend a background reflecting the true harmony.

Many operators do not aim to imitate nature, and hence the result is abortive. Often when the Logan might be slightly turned or deflected so as to lend natural appearance, they are positioned in such a manner as to completely deny their esthetic purpose.

We are seldom called upon to substitute a Logan crown but what the natural denture indicates that the Logan be materially altered in its general outline; eighty per cent of the Logans set are not changed, excepting at the contact surface, and even this

surface is not sufficiently changed to perfectly fit, while this large percentage should be modified most materially to complement nature. The cutting edge often should be cut flat, or given the irregular outline resulting from usage. The anatomical lines of the natural teeth should be accurately copied. The labial surfaces of the natural teeth often indicate that diseases or severe fevers have been guests, and when we substitute a Logan in these cases it must bear these same symbols, while the mesial and distal surfaces must be trimmed and shaped to harmonize with the general statue of the patient.

The recent published proceedings of the Illinois State Dental Society reports as follows regarding my clinic: "Clinic No. 35, patient, Mr. J. Hynes, presenting a broken superior central, the other natural teeth being a case of arrested or interrupted development. Dr. Cigrand set a Logan crown on the prepared root, and so ground down the surfaces of the Logan as to perfectly match the natural denture. The peculiar notched surfaces with sunken lines and irregular depressions were produced into the Logan crown by grinding down the artificial crown at points corresponding with the natural."

The Logan can be employed in all cases of a similar character. Illy developed teeth, as the Hutchinson, can be imitated in like manner. In the clinic just referred to, I completely ground off the glistening labial surface with corundum wheels, and after subjected the tooth to hydrofluoric acid, and this gave the Logan crown a lifelike appearance. All artificial teeth, the Logan included, have too marked a gloss to appear natural; a diminution in this brilliancy will add a considerable to their natural appearance.

Those dentists who have a dental furnace can stain the Logan so as to perfectly reproduce the lost natural crown. How unbecoming and painful it appears, when the partial natural teeth whose several cavities have been filled with various filling materials, the adjoining porcelain crowns off shade and so illy positioned as to present a hideous contrast. We are just beginning to learn of the possibilities in both prosthetic and operative dentistry, and the dentist who hopes to merit the confidence of the rising generation must model after the patterns found in nature; his daily studium must carry him to the laboratories of animal life, and his judgment must be sharpened by keen observation.

The Treatment of the Pulp and Pulp Canal.

By Joseph G. Pfaff, M. D., D. D. S., St. Louis, Mo.

This subject, as you all know, might well be called an endless one, for the reason of its variety of diseases and treatments.

In order to be successful in the treatment of the pulp and pulp canal, aside from having every instrument clean, and using thoroughly aseptic precautions, we must be well supplied with a great variety of plain and barbed broaches of different thicknesses and lengths. So often is it the case that the operator has but a few broaches on hand, and these not half fine enough to reach where he might if he had the proper supply.

For the benefit of those who do not make their own plain broaches I would suggest that they go to some jeweler supply house and buy about three sizes of plain Swiss broaches, all of which are larger than necessary, then using the small gas Bunsen burner employed for the annealing of gold, or the alcohol lamp; take one end of the broach to be tempered by the end of the handle with a pair of pliers, and holding about one inch above the flame; beginning at the end near the handle, hold the point about forty-five degrees higher than at the base, and keep the base over the flame until it becomes a dull red, gradually raising the thinner part of the broach as you see the temper coming out. After having slowly drawn the temper, and having selected the size larger than you want, then file down to the size you wish. By filing the broach, you cut away that which is more or less rough, and furthermore, the best of steel is at the center; thus giving you a broach, after some little experience, that will bend easily and is tough.

Being well supplied with everything necessary to treat the pulp and pulp canal, we will take up a few of the common diseases of the pulp.

The irritation of the pulp is an uneasy sensation gradually increasing to pain of a gnawing, shooting character, the affected tooth being sensitive to changes of temperature, painful in mastication, but exhibiting no symptoms of inflammation of the peridental membrane.

In treating, if a cavity exists, remove as nearly as possible all foreign substances and the softer parts of the carious dentine, using something like dilute carbolic acid, wood creosote, chloroform, oil cloves, oil cassia. Either one of these on cotton, with a

temporary stopping of gutta-percha over it, usually gives relief instantly. The oil of cassia I prefer not to use in any of the anterior teeth, it being liable to stain or discolor the teeth more or less.

The difference between acute and inflamed pulps is very hard to tell; however, I believe one can tell by the pain frequently extending to neighboring teeth and to the side of the face, but is more intense in the tooth itself. The pain may stop for a few minutes, to return again at any moment without any apparent cause. Sometimes the pain is of a thumping, throbbing nature. Treatment is about the same as that of irritation of the pulp. Counterirritants, soothing applications in the way of something warm, is about the best you can do, outside of destroying the pulp in severe cases.

In chronic inflammation of the pulp we have less pain than in the acute form, and it does not last as long; coming on at any time and wandering like neuralgic pains which are increased by changes of temperature. No doubt, very often the formation of pockets is produced by constant irritation of the pulp. These may be some distance from the apex of the tooth, filled deep seated with pus, sometimes swelling the surrounding parts so as to make you believe you have a chronic abscessed tooth, caused by a dead pulp. The treatment would be to lance deep to the bottom of the pocket and wash out with carbolized water, pack with iodoform ten per cent moist gauze, and dress again the next lay, thus letting it heal up from the bottom.

And the pulp in these cases, I think, requires judicious treatment in the way of local anodynes, and do not hesitate to apply something to destroy and extirpate the pulp as soon as possible—hat is, in cases where relief has not, or cannot be obtained.

Fungous growth of the pulp, as you all well know, is in a tooth vhen caries has extended down onto the pulp, and as a result of ontinued irritation. A small vascular tumor or granular mass, ometimes attached by means of a pedicle, and in some cases this rowth becomes so large as to completely fill the cavity in the rown of the tooth, usually extremely sensitive, and by touching it, slight hemorrhage is usual.

The treatment in this case, I believe, should be the free use of ocaine, and excision of the entire tumor, treating the remaining art with the usual method of arsenic.

Ossification of the pulp is indicated by a pain of a decided neuralgic character, commencing with an uneasy feeling, which may be continuous, but not constantly severe, sometimes nothing more than an uneasy feeling, and at times sharp, darting pains, affecting the side of the head, and sometimes very difficult to locate, the affected tooth being free from soreness and discoloration.

Treatment. Open the pulp chamber and completely extirpate the pulp with the usual method.

In regard to the pulps of teeth suffering from pyorrhea, I am most glad to express my experience in destroying the pulps of the teeth in the earlier stages of pyorrhea, and even where the teeth have become somewhat loose. It is surprising to me to see how it has helped to tighten them up, and prolong the lives of many teeth. I have been using this method for over eight years and the result which has been so helpful to my patients in obstinate cases causes me to cheerfully recommend it to you all.

In alveolar abscess pain is of a constant character, and deep seated, which is more or less aggravated at each beat of the heart, swelling becomes visible and defined and a little later discharge of pus; when this occurs, pain begins to subside. In the development of this trouble, the patient usually gives symptoms of coated tongue, offensive breath, thirst, headache, and when severe suppuration has occurred, chills and fever.

Chronic alveolar abscess is simply a continuance of discharge of pus through a fistula opposite or near the root of the affected tooth, and fluctuating swelling in the vicinity, or for some distance around it may be the result from abscessed teeth.

Treatment. Open into the teeth to give free vent for the escape of pus and gases. Wash out with peroxide, or five per cent pyrozone, and follow the treatment in the canals with that most valuable remedy—three per cent crystals of iodine dissolved in creosote. Lance to the bottom of the abscess sac and prevent this from healing by packing with iodoform moist gauze, ten per cent, and follow up by giving one of the saline cathartics. If the patient is anemic, I usually give a tonic of

℞ Tinct. ferri chloridii.....oz. i.
Quinia sulphate... .... dram i.
Sig. Fifteen drops in water four times a day.

Alveolar abscess about to point externally is very easily diagnosed. The skin for some distance around the immediate point

becomes red, the parts distended, with a throbbing sensation and considerable pain; later the appearance of the skin becomes thin and of a scaly character; the deeper parts becoming glued down, so to speak, to the bone around the spot where the pus will in time appear.

In treating make a deep, free incision to the bottom of the fistulous tract, or sac, between the diseased tooth and the surface of the cheek or lip, and pack the incision with the ten per cent moist iodoform gauze until the swelling, inflammation, pus and all danger of opening through the cheek has subsided. In case the abscess has opened externally, whatever you do, never extract the offending tooth; if you do, you will cause a depression at the point of opening that will remain a disfigurement forever, and probably a suit for malpractice on your hands.

The capping of exposed pulps is a subject upon which I know there is a great variety of opinions, at least there has been, and I think there is yet. In the young, I believe, we ought to try to save the pulp whenever possible until after the time the root is completely developed, particularly in the anterior teeth, for one good reason over all: It preserves that lifelike appearance of the tooth in color. After the age of eighteen to twenty, when it is pretty well exposed, I do not hesitate to destroy at once with arsenic. In doing so I prevent what so often has happened after capping, viz., the pulp's dying, and the consequent marked discoloration by the decomposition of the pulp, and its soaking into the dental tubuli. If you are compelled to cap the pulp, I know of nothing better than an essential oil and oxide of zinc mixed together and applied over the point of exposure and covered with cement, also copal ether varnish is used repeatedly, leaving thin coating, and cement over that. Another one that is good: Soak asbestos with oil of cloves and cover with a small concave disk, so as to avoid pressure, hold in place by cementing over it.

During the application of arsenic, when it is possible, I would advise the application of the dam, to prevent the introduction of anything foreign in your treatment; also it gives you two hands free and clear to work with. Then break down your frail margins and open up well to have free access and plenty of light, at the same time giving an opportunity to do justice by your patient and to yourself, then take away the foreign and broken down substance as much as you can. I do not mean to say only over the pulp, but

around it as much as possible, especially about the margins of the cavity. If you do not, you are liable to have more or less of the arsenic paste pass out onto the soft tissues, no matter how carefully you place your temporary stopping. The formula that I use, and am very well satisfied with, is:

Arsenious acid..... gr. x
Morphia sulph..... " xx
Creosote q. s. to make a thick paste.

To the above formula I sometimes add a little lampblack to color it so I can see if any is leaking out. The above paste I apply on cotton as near the pulp as possible, then seal with temporary stopping. If the cavity is an approximal one, I build up the approximal wall with cement and apply my paste on cotton with the temporary gutta-percha stopping over the paste, and always use fresh dialyzed iron, no matter how sure I am, for I have had cases where I did not apply the dialyzed iron after applying the arsenic paste that made the patient wonder what happened, and I am sorry to say, and free to admit, caused the patient to lose some of the process around the teeth and making that tooth somewhat lame forever. In the large approximal cavities up under the gum, where it is impossible to keep it dry, to use cement, I first use a little oil of cajeput in the cavity, then pack my gutta-percha down, leaving place for my paste on cotton over the pulp, and then seal it, being particular to use the dialyzed iron, and make an appointment for the next day, for I never in a case of this kind like to see the patient stay away any longer than twenty-four hours, no matter how sure I am about the paste being sealed in, and how much dialyzed iron I use, I am still afraid of the patient's displacing the temporary sealing in mastication, in that way causing the paste to get out onto the soft tissue. When the four walls are there I am not so particular about the next appointment, generally about the third day. The second appointment, if possible, I apply the dam, washing the tooth and stopping usually with alcohol or ether before opening up into the tooth. I then open into the pulp chamber as much as possible without causing the patient much pain. At this stage, I do not, as a rule, find the pulp devitalized and as a rule do not attempt to remove the pulp at this sitting. If I do not, I apply the usual dose of arsenic paste as before, sealing it up from three to eight days, according to how nearly I have the pulp devitalized. I have never had a patient experience any

trouble with the arsenic being left in as long as that. At the third sitting I open up as directed before, and usually find the pulp devitalized, or so nearly that I can extirpate pulp without much inconvenience. If the pulp is not dead at this sitting, which sometimes does occur, I put in the saturated solution of tannic acid in alcohol for a few days longer, which, as you know, is used to shrink the remains of the pulp.

Selecting the proper size plain Swiss broach with a few strands of cotton wrapped around it, I gradually work it up to the apex of the root, gently turning it around till the fibers of the cotton become tangled up in the pulp, and again gently turning it around a few times, gradually pull it out; as a rule I have the pulp on my broach; this is in large and medium sized root canals.

In the fine root canals I use both the barbed and plain broaches, but prefer the plain for no other reason than that I am more successful with them. I work my way up as far as I can with a broach, then draw it out so it does not bind, gradually drawing the remains of the pulp out. In some of the very fine canals I use the barbed broaches to increase the size of the opening, thereby enabling me to see my way more clear. Sometimes you find the pulp very much alive at the apex; if so, I take some carbolic acid and force it up to the part alive, pushing my broach into it, and in a short time you have the remaining part completely destroyed.

After thoroughly taking the pulp out, if there is some little hemorrhage, I put in either a little alcohol, a solution of antipyrine in alcohol or tannic acid in alcohol as a styptic. At this stage I do not hesitate in the least to fill the root immediately. And why not? You have nothing there, or at least you ought not to have anything but clean, healthy, empty root canals. In fact, I will go as far as to say when you have arrested all hemorrhage that by not filling it immediately, very often something gets into the canal by accident, or you may put in something that does not belong there, such as the oil of cassia or any irritant which you may force through the sides or through the apical foramen, causing, the next day, extreme soreness, teeth becoming long, and sometimes causing the patient to believe he has an ulcerated tooth. This soreness is caused by the irritants going through the foramen and causing inflammation of the peridental membrane and surrounding parts, producing for the patient an endless amount of agony

for a few days. For this inflammation the treatment will sometimes cause you to think. When you are in doubt as to the canals being in a condition to receive the root fillings, I would suggest that you put in nothing of an irritant character, but put in as a dressing something mild.

For root filling I use the chloro-percha, after thoroughly drying out the canals and saturating them with either the oil of cajeput or eucalyptus, pumping the chloro-percha to the ends of the canal with the plain broach; after that I fill the remaining part of the cavity as full of chloro-percha as possible, then with a soft piece of gutta-percha with a little pressure sending the chloro-percha home. By doing so, I think you are less liable to force air through. In the very large canals I use the gutta-percha points but do not attempt to use them in the smaller ones.

Destroying the pulp with cataphoresis, I believe, will never be used universally on account of the length of time it takes; and being unable to confine the current to the pulp where the cavity is large and high up underneath the gum margin without your sending the current into the parts around the tooth instead of the pulp, as the current will always take the easiest way.

In cases where you want to destroy the pulp, and fill the root immediately, for a patient who lives some distance and is unable to come to you often for treatment, I find it a great help, even if it does take a little more time, charge accordingly.

The Importance of, and How to Produce Good Casts for Orthodontia.*

By C. D. Lukens, D. D. S., St. Louis, Mo.

Before beginning the correction of a case of irregularity it is not only highly important, but absolutely essential, to a clear diagnosis and conception of the difficulties to be encountered, that we have a cast of both upper and lower arches, and that it be perfect in every detail.

While the various vegetable compositions, such as wax, modeling compounds, gutta-percha, etc., are resorted to with varying degrees of success in other branches of dentistry, they are wholly unreliable in work so exacting as orthodontia. Owing to the

*Read before the St. Louis Dental Society.

impossibility of removing the plastic mass, due to the mechanical construction and arrangement of the teeth, the fine lines are obliterated and the impression drawn to such an extent as to render it wholly unreliable as a base from which to make fine deductions, a point of too great importance to receive slight consideration; but by using plaster, manipulated after the method introduced by Dr. E. H. Angle, we have a medium, if one will exercise that infinite painstaking in every detail so essential to the production of all really fine work, by which we can produce casts almost ideal.

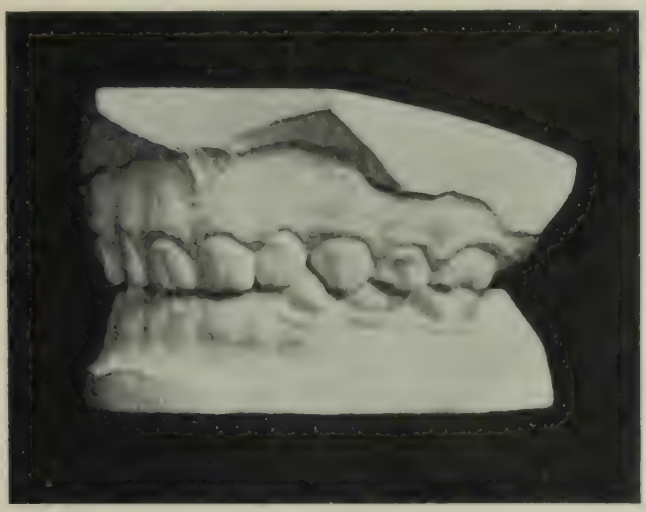


FIG. 1.

One of the most common causes of failure in impression taking is the inferior quality or bad condition of the plaster used. In my own work I have found French's plaster furnished by the depots superior to all others, but the very best quality will deteriorate if not properly cared for, especially during damp weather, by absorbing the moisture from the atmosphere. This should be guarded against by the use of cans as near air-tight as possible. During and after protracted periods of damp weather these cans containing the plaster should be placed on a radiator, or other suitable place, and the entire mass warmed thoroughly through, care being taken to remove the lid from the can. Those who bestow the amount of care upon their plaster which it deserves will rarely be annoyed with the disastrous results often attending its use.

The selection of a proper tray is of next importance, as it is necessary to have a cast showing the alveolar process and incline

of the roots as well as the teeth. Care should therefore be taken to select a tray with a rim sufficiently high. The Angle tray is most suitable, being provided with an unusually high rim, rendering it invaluable for this purpose and also for the taking of partial cases. The tray should always be sufficiently large to admit of a good thickness of plaster between the rim and the teeth, thereby avoiding the embarrassment consequent upon the reconstruction of the impression. Another essential to the success of this method is in keeping the trays clean and highly polished, the importance of which will be seen later. After each using they should be washed, thoroughly dried and laid away in a chamois, where they will not be liable to damage, for once they become scratched and marred, they are rendered worthless.

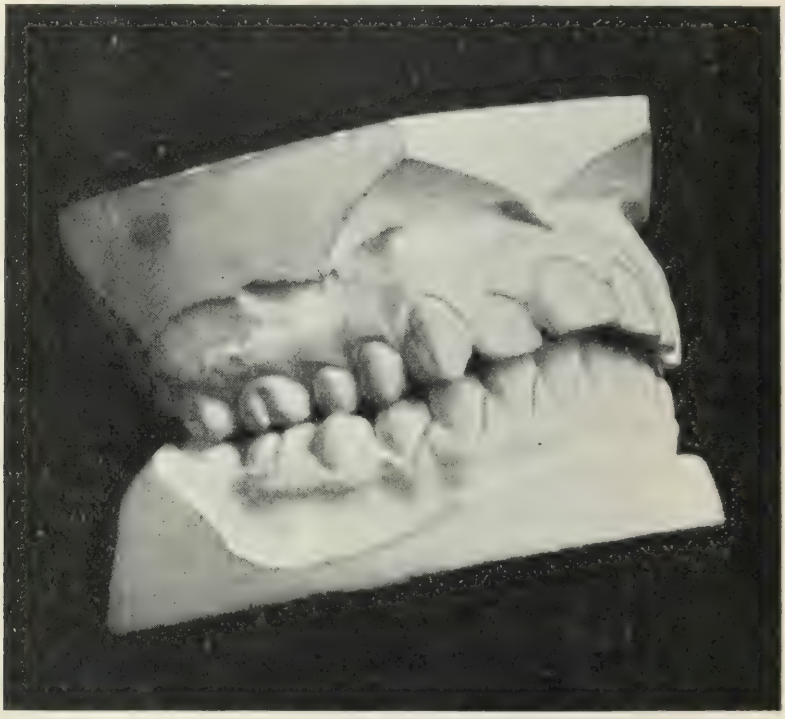


FIG. 2.

An objection often urged against the use of plaster (and one which I consider groundless) is that children will not submit to its use. I feel confident that in the great majority of cases where an objection is raised by the child it is the result of the operator using too much or not correctly distributing the plaster in the tray, as I have never failed to get a good plaster impression of my little patients and on several occasions have taken an impression

of the deciduous teeth just to satisfy a curiosity on this point. Fig. 1 shows a cast of a little four year old.

Great care should be exercised both as to the amount and distribution of the plaster. The deeper portion of the tray should be filled only a trifle above the rim, except in front, where it should be built well up, even allowing a portion to rest out on the handle, being careful to leave the palatine portion of the tray entirely bare, except in cases of a very high arch, and even then, it is much better to introduce a little plaster on the tip of the forefinger to the highest portion of the arch, instead of covering the palatine portion of the tray, as there is less liability of the plaster being forced



FIG. 3.

back upon the soft palate, thereby nauseating the patient when the tray is carried into position. The tray being filled and placed in the mouth ready to force into position, the back of the tray should be elevated first, thus carrying the excess of plaster forward where, with the forefinger, it should be worked well up under the lip, manipulating the lip upward, thereby getting a much higher im-

pression than where the lip is pressed down on the plaster as is a common practice.

The harder the plaster is now allowed to set the better will be the result, for, in removing the impression, the lines of fracture will be sharp and distinct, thereby greatly facilitating its reconstruction. The tray is now easily removed, owing to its highly polished surface, allowing the entire mass to remain in the mouth, in which a notch should be cut with a penknife, usually over the cuspid teeth, but it will often be found to advantage to cut the notches in other positions. This, of course, must be determined by the judgment of the operator. The front plate of the impression is then wrenched loose, the lateral plates are readily broken loose with the forefinger, and the palatine portion can usually be removed intact and the whole laid on a glass slab or piece of blotting paper and allowed to become thoroughly dry; otherwise in reconstruction the fine serated margins of the fractured pieces will become smooth and it will be impossible to place the pieces in their correct positions for uniting the fractured impressions. I find the yellow base plate wax superior to any other material.

The attempt should not be made to place the pieces back in the tray, as the angles of the fractures and the expansion of the plaster are sufficient to defeat the purpose. The impression is now treated with a coat of shellac varnish, which acts both as a filler and furnishes a line of demarkation when separating. This is followed a half hour later with a coat of sandarac. After considerable experimenting I find that the consistency of these varnishes should be an eighteen per cent solution of shellac and twenty per cent solution of sandarac. If they are much thicker than this the fine lines will be obliterated and if any thinner we do not get the fine, marblelike surface so desirable on the cast as shown in Figs. 2 and 3. By keeping varnish in Ingersoll bottles and placing glycerin on the ground surface of the cover, and a stick across the neck of the bottle on which to drain the brush, evaporation will be prevented and the last of the varnish will be of the same consistency as the first. A common practice after treating impressions as just described is to wet the surface before pouring, but in my hands it is a failure, as I get fewer air bubbles and a much better surface on the cast by leaving the impression dry and painting the plaster into the deeper portions with a camel's hair pencil and placing the impression upside

down on a portion of plaster poured on a glass slab. After being allowed to thoroughly set it is separated in the usual manner familiar to you all. Figs. 2 and 3 show cast of two different forms of irregularities made after the above method.

How I Treat Simple Cases of Pericementitis.*

By Dr. E. K. Wedelstaedt, St. Paul, Minn.

Experience has taught me that it is a somewhat dangerous thing for a man in any profession to read a paper before a body of men who are pursuing the same calling as himself, especially if he is going to advise a deviation from the well worn path that is trodden by the majority. The moment a man attempts to persuade men to give up the old and accept in its place something that is new and untried by the majority, he may expect to be called a disturber of the peace. He need not be surprised at hearing much caustic criticism and, unless he is a reformer, he will be very chary how he again comes before a body of intelligent men with any innovation. I do not know what is going to be said in regard to my paper to-day, for I am perfectly well aware it is a radical departure from the old methods so long in vogue. It is the purpose of this paper to call your attention to what I term a rational treatment of simple cases of pericementitis. I ask of you but one thing, and that is this: Condemn that to which I shall call your attention only after you have given it a trial.

Recently I had the pleasure of hearing an essay read on "How I Treat Simple Cases of Pericementitis." The subject was most admirably handled, and was one of the best of many papers I have heard read on this topic. The entire field was taken into consideration, ploughed, harrowed and seeded. The grain came up, was reaped, stacked, thrashed; and the result was a more bountiful harvest than I had ever supposed it was possible to obtain. I should like publicly to compliment the young man who read this paper, for he deserves it; but his modesty is such that should I use his name, I should never be forgiven. I have said the paper was most admirable, and such was the case. There was, however, one statement in it with which I could not agree, and that was, "Where there is severe pain and it is necessary to drill into the

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* Read before Minnesota State Dental Association, July 26, 1899.

pulp chamber, I do this and leave an open cavity for the escape of gas and pus." Good natured exception was taken to his statement by two of the members of the society. It would have been well if they had held their peace, for "silence would have been golden" at that particular meeting. Such a "climbing on" as these two members received from the rest of the society I shall never forget as long as I live, and I most sincerely trust that the members of this society will not see fit to give me such a dose as was given these two men. Let us have a good discussion of this paper, and let us get all the good out of this subject that we possibly can, so that much can be learned by all present.

Let us take a typical case. It is nine o'clock in the morning. A lady walks into the office and says, "I have not slept any all night. There is some trouble with one of my teeth. It is longer than the rest, and every time I touch it with the other teeth or my tongue, it hurts me." She is seated in the chair and we find the trouble is in an upper right second bicuspid. It has a large mesio-occlusal filling in it. The patient is questioned and we find the pulp has not been destroyed. The first molar and the first bicuspid (the adjoining teeth) are in position. I will go into detail in handling this case. The gum is first examined to note its condition. The occlusion of the teeth is next examined. The rubber dam is then applied over molar and bicuspids. Then I wash the dam and teeth with a disinfectant, obtaining as nearly as possible, surgical asepsis. Very frequently I ligate the lame tooth with a piece of No. 25 Irish linen thread about eighteen inches long. Tension is very often placed on the thread with good results. I should then take a sharp spear pointed drill that was surgically clean, place it on the engine and drill a cavity through the filling if necessary, between the lingual and buccal triangular ridges. As soon as the pulp chamber is entered, the drill would be withdrawn and the cavity somewhat enlarged by using a sharp and surgically clean bur. If on removing the drill from the pulp chamber, it be followed by a flow of dark red blood, I should, as soon as the cavity in the crown of the tooth had been enlarged and the flow of the blood slightly checked, remove the pulp with a surgically clean broach. As soon as the hemorrhage had subsided, the pulp canal would be wiped out with dry cotton until no signs of moisture were visible. Some oil of cloves should be introduced into the pulp canal, the canal dressed, and the occlusal cavity in the crown

of the tooth filled with gutta-percha. I do not recall at the present time ever having a patient return and complain of pain where this method has been followed. On the contrary, the results have given me and given my patients the greatest satisfaction.

Now let us look at this again. If, on the withdrawal of the drill from the pulp chamber, it be followed by pus (the color and variety does not make any difference) I would not introduce a broach into that canal. By the gentlest means possible, I would get all the pus out of that cavity that I could. There would be no attempt made to cleanse it. On the contrary, I should let it alone. I should treat it with some oil of eucalyptus and with exceedingly great care work it into that canal. Then I should place a small piece of cotton into the pulp chamber and fill the occlusal cavity in the crown of the tooth with gutta-percha. Five or six hours later, I would again adjust the rubber dam, get as near surgical asepsis as I could, remove the temporary filling and cotton and cleanse that pulp canal. All the instruments that I should use would be as surgically clean as I could make them. The pulp canal would be treated precisely as I have described in the first mentioned case, and the patient dismissed with instructions to see me, provided there was return of the pain. An appointment would be made with this patient to return one week later, when, without further treatment, I should fill the root of this tooth. I desire to say there is nothing original about this method. I have followed it since 1890 and am perfectly satisfied with the results. Dr. Black was the first to call my attention to it, and I am candid when I say I could not believe his statements in regard to the success he had in handling cases of this kind. But after seeing so many of these cases in actual practice at his office, and noting the success he had, I adopted it myself.

If I have led my hearers to believe that my medicine chest contains only the two medicines mentioned in this paper, I beg leave to disabuse their minds of anything of this kind. Out of sheer curiosity I counted the different medicine bottles in my case and find there are fifty-seven bottles there containing remedies of different kinds to be used when needed.

For fifteen years I have attended dental meetings and have followed the discussions closely, and I believe, gentlemen, that there is greater need of a reform in the treatment of simple cases of pericementitis than there is in any other department of dentistry.

I believe the day has passed when it is necessary to leave vents for the escape of gas and pus from putrefying pulps. Where the pulp chamber comes to us closed, I do not think any one is ever justified in sending that patient out of his office with an open vent. Do not misunderstand me now; I am not speaking of those cases that come to us with the pulp chambers open. I am making no reference to cases of this kind. Cases of this kind are not even taken into consideration for one instant, nor am I referring to any treatment of them. What I have said refers to this special case only. If a tooth is not filled and I open into a pulp chamber my treatment of that case would depend wholly upon the condition of the contents of the pulp cavity. If the crown of the tooth were apparently sound and there was a simple case of pericementitis, I should open into the pulp chamber by the same means, using the same method that I stated I would do in case the tooth was filled. In such cases I take every care to be certain that the occlusal cavity I had made in the crown of the tooth to enter the pulp chamber is securely filled with a temporary filling.

Treating cases of pericementitis in this way is known as rational treatment and if one is to judge from the successes of those following methods of this kind, it would be well for many to follow along this line. Much trouble is saved the patient and the operator, if a little thought is expended in handling these cases.

It may well be asked, "If you consider the methods you have described to us as rational treatment what do you consider irrational treatment?" This is easily answered and it will perhaps amuse you as it certainly has me. Recently a dentist who is well and favorably known in this State, consulted me in relation to a case of this kind that he could not "cure." When asked what his treatment was, he said, "I have treated this tooth with carbolic acid three times a week for twelve months and still it will not get well." I suggested to him, if he would fill the roots of that tooth and give nature a chance, she would soon do what he could not. A short time ago I received a letter from him and among the things he says, is this, "The suggestions you gave me have been followed and it is now a pleasure to treat a case of pericementitis. Formerly they were the bug-bear of my existence.' From another dentist I ascertained the following: "I treat all cases of pericementitis with carbolic acid, because that is what was taught to use in college and I know of nothing better. It doe

cause a great deal of suffering and a great many swollen faces, but in two or three weeks they are all right again." From another: "I stuff the cavity as full of powdered iodoform as I can and then shove in some cotton and sandarac, tell the patient to come back in a month, and then fill the roots." (His own statement.) From a fourth: "I clean out the pulp canal and fill the roots at once." I give you these four statements that have been made by four different men in our profession. I do not think methods of this kind are rational. I cannot understand them. They show very plainly one thing and that is, that those making them associate with themselves too much. They do not attend dental meetings. They do not have an interchange of ideas with other men in our profession; for if they did, I do not think they would make statements of this kind to any intelligent dentist. I do not like to say anything of this kind to the dentists anywhere in the world, and more especially to the men of the Northwest, for nowhere are the dentists making such progress in furthering those scientific principles to which their attention has been called, as they are right here in the Northwest. The anxiety to learn I am well aware of; for has it not been a characteristic of the men in this State for a long time past? I think, gentlemen, that I am in a position to know. I feel in calling your attention to the treatment of these simple cases, that it will be but a question of a very short time before a long step in advance will be made.

There is one other thing to which I wish to call attention, in fact, there are several, but I have already said too much. I want to speak about the treatment of these cases by a method that is now coming into vogue, and that is, the attempt that is being made to seal into pulp cavities dead tissues, using some of the formalin preparations. This I consider the most irrational of all the things that have been called to our notice. When we stop and think for one moment what this means, it is as clear to us as the sun's rays. We cannot leave a dead pulp in a tooth and work formalin, hydronaphthol, iodoform, or any other preparation of this nature around it and expect that that is going to be a permanent filling. A patient consults a surgeon. The patient's hand is mortified. It is dead and black. Does any sane man live who believes a surgeon could inject any of these preparations into the man's hand and expect good results? On the contrary, it might do for a while, it might be a temporary expedient to tide the mat-

ter over for a short time, but when it came to permanent results, something else would have to be done. The same holds good in regard to the treatment of the roots of teeth. There are dentists so blind that they continue to follow one method for sixty years—as one man recently informed me he had done, citing this as proof of the correctness of his theory, when you, and I, and all of us, know that was wrong. What was his theory? That he could fill the roots of teeth with cotton and carbolic acid and could get good results therefrom. This good man had the audacity—and I use the word knowing full well its purport—to state that he had abscesses form repeatedly and did not know the cause. There is not a man in this room, not one, but could very readily tell him why it was that abscesses always formed where the roots of teeth are filled with cotton and carbolic acid. There may not be any trouble in cases of this kind for twenty years, but the day of reckoning comes, as it must from necessity come, to all who follow irrational methods of this kind. Cotton and carbolic acid are like whisky, cocaine, morphine and the rest. They are good in themselves; use, but do not abuse them.

It is a great pleasure to meet with you again this year, and I trust much good will result from this meeting. If at any time I can be of assistance to you, I stand ready and willing to do your bidding. Please accept my thanks for your courtesy and attention.

A Banded Logan Crown.*

By Lelan Otis Green, D. D. S., Chicago, Ill.

Each and every one of us has an ideal in some special branch. Dr. B. has a hobby for root canal filling, and he pursues a method that is his ideal. Dr. C. also has an ideal, and it takes a typical prepared cavity to meet his ideal, and so on. I, like the other fellows, have an ideal, and it consists in a banded Logan for any of the upper ten anterior teeth. When called upon to adjust a porcelain crown to any of the above mentioned teeth, I consider it my duty as a professional man to select that crown which I know will be the most durable and lasting to my patient and at the same time give the desired esthetic effect and obtain the proper symmetrical alignment of the adjacent teeth. The advantage of

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*Read before the Southwestern Michigan Dental Association.

the banded Logan over all other porcelain crowns are fourfold—strength, durability, beauty and simplicity. It is a well-known fact that in order to obtain the requisite strength in any sort of porcelain work we must have it in mass or in bulk, otherwise it is weak and will be broken down sooner or later—and it is quite liable to be sooner. Why is it that we see so many porcelain face crowns checked or broken off entirely? For the simple reason that the crown has a slight veneering of porcelain, and too often it is ground to such an extent that it is still more weakened; and then, again, the facing, as a rule, is improperly backed. By the time the case is soldered the facing is checked to begin with, and about the first stress that is brought to bear upon the incisal edge of the crown, away goes the facing. Now, all this trouble can be overcome by utilizing the Logan crown, properly banded. By so doing we get strength and continuity, which you can readily see enhances its value over the ordinary porcelain crown.

For illustration I will select the upper left central, taking for granted that the crown has been excised and the root canal filled at the apex. In cleaving the enamel from the root I use Dr. Case's cleavers and Dr. Prothero's root finishers. The root being devoid of all overhanging enamel, the measure is taken; cut, solder and fit the band. Now remove the band and with safe sided root facers numbers seven and eight cut away the root on the labial until the band, which is also cut on the labial, is buried under the gum tissue. The lingual portion of the root is cut just to or slightly below the gingival line. Remove the band and solder on the floor, using twenty-two carat gold solder; now we have the cope, which place in position and proceed to grind the crown until it fits the cope at the labial, after which, grind a slight incline on the lingual extending from the central portion of the tooth at the base of the pin to the lingual edge of the crown. Now take a piece of pure gold, number thirty-four gauge, well annealed, punch hole to receive the pin and force the gold down onto the neck of the crown. Here I use a large cork and soft pine stick to finish swaging the gold to the crown. Force the pin down into the cork until the crown comes in contact with the gold. I cut a V shape in the pine stick and place the V over the end of the incisal edge of the crown, and with a small riveting hammer gently tap the stick until the gold is thoroughly swaged over the gingival end of the crown. I can adapt

a piece of gold more accurately with this method than with any other that I know of. Now remove the crown from the cork and trim the gold at the periphery, after which drop a small piece of sticky wax on the pin. Dry the cope, which is in position on the root, and when the parts are thoroughly dried, take the crown and slightly warm the pin and wax, forcing it into position, holding it firmly until the wax hardens. Now remove with care. The cope and tooth will come off together. After drying the cope, take a toothpick, at the middle of which stick warm wax. This lay across the labial portion just at the union of the cope and crown.

Now the case is ready for investment. For investing I use about two-thirds ground asbestos and one-third plaster. I invest high so the investment will not be weakened when the toothpick is withdrawn and the plaster shaped up for soldering. After the investment is hard, slightly warm the wax and withdraw the toothpick. Trim like the investment I show you. You can readily see how easy it would be to solder a case invested as this one is.

Before going any further, I want to say that I am indebted to Dr. J. H. Prothero for this special mode of investment, and I also want to say that it is as far as I know original with him.

When the case is ready to solder, it is well to fit a piece of gold plate in between the cope and gold covering the end of the crown. This acts as a wedge and prevents the gold pulling away from the edge of the crown during the act of soldering. Solder with twenty carat solder. When perfectly cool, remove and finish in the usual way. There is no doubt in my mind whatever that a crown so constructed presents the most desirable of porcelain crowns. I will say, however, that like all other crowns, there are conditions where it would be unwise to use a banded Logan, such as a close or short bite, where one must sacrifice a goodly portion of porcelain, a banded Logan is not indicated.

Just one word of caution. In the Logan crown there is a large, tapering post, the large end being baked in the porcelain. When heating up to fuse the solder, one must use precaution and heat the porcelain fully as hot or even hotter than the pin, in order to prevent uneven expansion and checking of the porcelain.

President's Address.*

By Cecil Whitman Cox, D. D. S., Batavia, Ill.

I have had the honor and also the misfortune of having been elected president of the Northern Illinois Dental Society. The honor I appreciate most highly, and the misfortune you will be obliged to share with me. By some strange combination of circumstances, I was selected, and unanimously elected to this office last year at Rockford. I well knew then that my qualifications were not what they should be, to allow me to accept this position, but the temptation was so great I could not overcome it, and then a year seemed such a long time that I thought I would have ample time to qualify myself for the office.

I would have time to make a study of this, I would brush up on that, Roberts' rules of order I would have at my tongue's end and I felt I could then be a presiding officer of whom you need not be ashamed. But the months have crowded each other out with such unbecoming haste, that a year (which seemed so long then) has slipped away before I knew, and here I am to-day, with none of my resolutions kept, and no better qualified to fill this place now than I was one year ago.

But if you will bear with me patiently, and not criticise my shortcomings too harshly, I will endeavor to get through with this convention, and at least not disgrace you. We have met here in Elgin to-day, to open the twelfth annual meeting of this society. Beautiful Elgin nestled here among the hills, on either side of the lovely Fox River, is a gem of a city—a jewel—indeed full jeweled open faced, with hands too numerous to mention—and even whose main springs it would take days to count. Why its very hair springs and then its cases, and escapements.

But this has gone far enough. Elgin is one of the most famous cities in the world, not even excepting Milwaukee, and none of its inhabitants, no matter how delicately reared, need ever blush for that which has made Elgin famous. Elgin indeed is time honored.

There is no civilized nation in the world whose people have not heard of Elgin. In distant countries there are no doubt many people who never heard of the State of Illinois who are familiar with the name of Elgin. The name of Elgin not possibly, but most probably has been carried to the deepest depths of darkest

*Northern Illinois Dental Society.

Africa, and has been taken northward, over frozen mountains of ice, to the most northern point ever reached by man, graven in gold, on the trustworthy timepiece which conscientiously and steadfastly ticked away the minutes and hours as accurately in those far distant climes as it had done here in this city, the home of its birth.

No one can visit Elgin without being reminded of time. As we pass the magnificent watch factory, we see old father time, posed on its pinnacle, with his old scythe in hand, ready to push on unrelenting, and cut great swaths into the future, regardless of the swaths he has left behind in the past; ready again, to pile up long windrows of blighted hopes and blasted lives, regardless of the endless windrows he sees behind.

We all appreciate the fact that time moves ever onward.

Like a gigantic passenger train, which stops at no stations, he rushes on, even dropping his passengers at their destinations with no slowing of speed.

We are all aboard this train, and as we gaze from its windows, we see the years, like mileposts go gliding by, and we realize our destinations will soon be reached, that others, and new passengers will occupy our places, and the train will go tearing on. If thoughts like these pass through the mind of a visitor to Elgin, I should think the people of Elgin, would be so saturated—so impregnated, if you please—with time, that punctuality would be their motto. If such is the case, let us emulate their example while here, by punctuality in our meetings—by being in our places and opening meetings promptly on time.

Time and progress should go hand in hand. Is such the case in dentistry? We live in an age of progress.

Any man here who is fifty years of age, has seen during his life, greater progress made in every line you can mention, than has been made in all of the remainder of these nineteen hundred years.

Every method of business, every avocation, every profession has made phenomenal strides, and thousands of men and women are engaged in avocations to-day, which did not exist and had never been thought of fifty years ago.

We have hitched the lightning to our cars and even to our wagons and made it haul us around.

We have become so accustomed to astounding things that we talk through a thousand miles of space to some friend in a distant

city and clime, he hearing and knowing our voice. We hearing and recognizing his without even a feeling of awe, and perhaps even berating the central because it takes three minutes to make the connections.

We have our morning paper served with our breakfast, and read of battles fought in far off Manila the evening before, and perhaps growl because the news is not more explicit.

We can take our breakfast in one city and our supper in a city six hundred miles distant, and are still looking for more rapid transit.

We can listen to the voices of great men, dead and gone; can note all their peculiarities of speech; can hear them as distinctly as if speaking to them face to face, without a feeling of apprehension.

We can see life sized pictures which move, run and leap; every gesture, every fold of the garment being seen as plainly as if the figures were alive indeed, and are not even surprised.

Photographers take pictures not only of things external and seen, but of things internal and hidden.

And now a new actor has stepped upon the stage and promises to play a great part, revolutionizing all kinds of power, with liquid air.

Everything has progressed—mechanics and arts, medicine and surgery, and even religion. If dentistry has held its place in the procession it has had something to do. Has it done so? I think it has just about kept step with the times. It has made great progress, but it has had to do so or fall behind, and I do not believe it has outstripped many other avocations or professions.

One of the greatest signs of progress in dentistry is the progress of the people themselves in dental matters. The greater confidence they show in dentists and what they can do; the greater things they ask and expect the dentist to do for them; the greater desire to save their teeth and the amount of trouble and expense they are willing to submit to to accomplish that result. No one here who has practiced dentistry twenty years can have failed to note this great advance in the people themselves. They have learned to appreciate their teeth and abhor the idea of artificial ones. They believe the dentist can save their teeth, and the reason they believe this, I think is because the dentists are doing it.

Twenty years ago I believe if the question, "What is a dentist?" should have been asked of the average schoolboy or girl, the answer nine times out of ten would have been, "He is the man who pulls teeth." To-day I do not think the same question would be answered that way once in twenty times. People have learned there is something else connected with the practice of dentistry besides pulling teeth.

Twenty years ago the following conversation was such an everyday occurrence that any one here who practiced dentistry then cannot fail to remember it. We will suppose a young lady came into the office for the purpose of having a tooth extracted. After examining it the dentist would timidly suggest the tooth could be saved by filling. The young lady would answer, "Oh, my! I wouldn't have a tooth filled for anything. I know it don't pay. Why, my mother had all her teeth filled, but it didn't do any good; the fillings all came right out, and she had to have all her teeth pulled. My! You wouldn't catch me having a tooth filled. It hurts worse than pulling, anyway, so ma says." Have you ever heard such talk as that? Well, you do not often hear it now. The talk now is more like this: "Doctor, I have had a great misfortune. I have neglected my teeth, and to-day I broke one off. Can you put a new one on the root? My sister had a root that was ulcerated and her face swollen, but the dentist treated it and put another tooth on it, and now it looks and feels as well as any tooth she has."

You tell her, "Most certainly, I can crown that root for you, but you may have to make several visits here before it is completed."

She says: "I am so glad. I don't care how much trouble it is if I can only save it. I think it is so terrible to lose a tooth."

These are homely illustrations, I know, but they show very nicely the progress the people themselves have made in dentistry.

Twenty years ago most crowns were put on with wooden pins and no cement. It was sometimes quite wonderful how long they would hang on, but they generally smelled very badly. Even in Taft's Operative Dentistry of 1877 he tells how to put on pivot teeth, where pus was being discharged through the root. This was a very simple operation then. A nice little groove was cut the length of the wooden pin to give the pus a chance to escape. What would we think of such teaching to-day?

Twenty years ago a lawyer or an insurance man would as soon have his office next door to a boiler factory as next door to a dentist's office, and the noise from the boiler factory was even preferable to the yells and groans emanating from the dentist's office.

But that is all changed now, and the sounds from the dental rooms to-day, are as subdued as the tones in the public library. By exercising care, and with the aid of the medicines now at hand, a dentist can perform almost any operation in his line, with but a trifling amount of pain, and the people are fast finding it out, and the dread of the dentist's chair is fast disappearing. Dentistry has made rapid progress along all lines, and it must be an extremely neglected and desperate case where a tooth or root cannot be saved and made useful to-day.

But I think in years to come the dentist will not have so many horrible teeth and roots to care for. The people will not allow their teeth to get into such desperate conditions.

The old adage says: "Procrastination is the thief of time," and it can be as truthfully said procrastination is the thief of teeth. People are beginning to understand this. They have their children's teeth attended to; they have their own teeth attended to without waiting for sleepless nights to force them to visit the dentist. Thus the dentist's life will be made more pleasant, and he will not be obliged to be forever engaged in the soul harrowing work of treating dead and abscessed teeth.

As this is the last meeting this society will hold during this century, I expect it would be proper to trace dentistry step by step through the past hundred years.

This would no doubt be interesting, but time will not permit it now; but I will say briefly, that during this century dentistry has come from almost nothing to its present standing. It has grown from a trade, where the number engaged in it could be counted on the fingers of one hand, who worked in a crude manner with crude tools, to be a recognized profession, with many thousands of educated men, with fingers carefully trained in handling delicate instruments, engaged in it.

Is there a possibility of any further progress? Has dentistry reached its zenith? We all know it has not, and the next twenty years will probably show greater progress than has the past.

One great chance for progress is in the dentist himself socially, politically and financially.

There seems to be something about the practice of dentistry which uses up the dentist's nerve force to such an extent you seldom hear of him in any other capacity.

Why dentists do not have a higher standing politically I have often wondered, but how many dentists do you know who are mayors or aldermen of their towns, members of the board of education, etc.? How many dentists do you know who are congressmen or senators, either State or national? How many men of wealth do you know who are dentists? Why, Bradstreet seldom gives dentists any rating whatever, and when he does I think the dentist generally wishes he had not.

These things are not as they should be, and I think there is great chance for progress in these matters.

There are thousands of highly educated men in the dental profession who are capable of taking high positions politically, and who make money enough to have a good standing financially, and I think the next twenty years will bring them to the front.

In the practice of dentistry itself of course great progress will be made. I believe inside of twenty years the ideal filling material will come, will be discovered or invented, a material so perfect the corner of an incisor can be built and no one suspicion it, a material as hard as porcelain and that will wear better than gold. By that time all pain will be removed from dental operations.

I expect you all received an invitation to write a paper on the "Care of the Teeth" from the *Cosmopolitan* magazine to compete for a $200 prize. I did not write a paper, but I have felt I could write one containing rules which if followed would save nearly all teeth, but would probably win no prize.

This is the paper I should have written.

When your child arrives at the age of three, take him to a competent dentist and have his teeth properly attended to. Have him visit the dentist once every three months, from that time on, for ever more.

His teeth will be saved. He will avoid much pain and suffering.

You will be saved many sleepless nights, and your dental bills will not be increased one cent.

That would have been the extent of my paper, and I believe the time has nearly arrived when people will act in just about this manner. This instructing children to take care of their teeth I think nearly useless.

I believe many grown people brush their teeth too much and have worn them out, and in most cases this has been the cause of those peculiar abrasions on the labial surface of the incisors we have heard discussed so learnedly.

I do not think a brush made of bristles is the proper instrument for cleaning the teeth, and I believe in twenty years from now most people will have forgotten such a thing was ever used.

Twenty years ago, it was almost a criminal offense to acknowledge the use of amalgam, but amalgam has plodded along its soggy way, and has won the day.

Much less than twenty years ago, dentists would enter into warm discussions about whether operative dentistry and prosthetic dentistry should be practiced by one and the same person. Crown and bridge work has kindly stepped in and welded operative and prosthetic dentistry so solidly together that nothing can part them. Twenty years ago the dentist who used rubber as a base for artificial teeth had to pay a license of fifty dollars a year, like a street peddler, for that privilege, and if he did not do so, he would have a United States marshal haul him into Chicago, where he would have to show reasons why he should not be hung.

I cannot say dentistry has made as much progress in such matters as it should, for now, another octopus has escaped from his cage and is gallivanting up and down the land, reaching out his snakelike arms, trying to grasp the poor dentist and squeeze out a goodly share of his hard earned dollars, and I expect the time has come for dentists to gird up their loins anew, put on their shield and buckler and be prepared to meet this monster and perforate his slimy head whenever he lifts it up.

PROCEEDINGS OF SOCIETIES.

Odontographic Society of Chicago.

Regular meeting, September 18, 1899. The President, Dr. H. J. Goslee, in the chair.

The chair called upon Dr. R. C. Brophy to read the paper of the evening.

Dr. Brophy: When I was asked by your program committee to read a paper, I unhesitatingly consented, not because I

felt that the committee in extending the invitation to me had demonstrated a realization of just what is best for the society, but rather because I felt that as a member of the society it was my duty to respond to any demand made upon me, and aid as best I might the work it has in hand.

Having consented to contribute the paper, however, in trying to determine upon what subject to write, I found myself engulfed in a chasm of perplexity. My inclination was to devote my effort to a consideration of the subject of plate work, yet I knew, and was so advised by some of my professional friends that if I undertook to discuss this antiquated theme, I would entail upon myself no end of trouble; that, in the language of one of my friends, any argument I might present would be "ripped up one side and down the other." I realized the reasonableness of this suggestion and it was unpleasant to contemplate, yet it failed to influence me in opposition to my original design. Besides this I realized that the prevailing tendency of the modern dental essayist is to ignore old issues, and spring upon the profession new ones; a commendable tendency, perhaps, for it would appear to denote progression; and from a knowledge of the experiences of others who have occupied this platform before me, I knew that if one aspires to enroll his name upon the scroll of professional fame, some such step is essential. Would I ignore the opportunity of making myself famous by refraining from springing upon you something sensational? I concluded so to do. And so, gentlemen, I am going to trot out, for a regrooming, the old stage horse of the profession, the old, time worn subject which our professional forefathers evidently regarding as of greater importance than do we, loved to consider on occasions such as we are enjoying to-night. I feel that in justice to myself I ought to say that this paper was to have been presented at the October meeting. A few days ago I was approached by our secretary with the request that I present it to-night. He said our president told him I was ready—another, simply one more misdeed our president will have to answer for. I think you will all appreciate what it means to have four weeks clipped off the tail end of the preparation of a paper, six weeks before the expected time of delivery. I feel that it justifies me in expecting my effort to be more leniently dealt with by you.

Dr. Brophy then read his paper on "A Chapter on Plate Work." (See page 881.)

DISCUSSION.

Dr. Bentley was called to the chair while the president, Dr. H. J. Goslee, opened the discussion.

Dr. H. J. GOSLEE: To begin with, I wish to apologize to Dr. Brophy for having been the means of causing him to read his paper at least a month before he was due. However, I knew he would be equal to the emergency, and as the gentleman who was to occupy the evening this month wished for a later date, I placed the doctor in his place.

The doctor has indeed groomed the old stage horse in pretty good shape and has presented to us a paper that is replete with good practical information, even though it be on a subject as old as he says it is and as we know it to be. It is very true, I think, that we have made so little progress in the prosthetic line with special reference to plate work, in the last two score years. I believe you will all concede that the dentist of forty years ago was a better prosthetic workman than the average dentist of to-day. They, of course, worked along an entirely different line, and in metals altogether. The advocates of vulcanite, as the doctor has said, brought the art of dental prosthesis down to a very small score. When we compare our own work with the work of the prosthetic dentist from the other continent, that is, our European brothers, we must acknowledge that they are way ahead of us in many, many respects, due mostly to the fact that they do more metal plate work than we do. While we may possibly be a little more artistic in carrying out the finer details, when it comes down to the practical application of the work for strength, we are not in it with the workmen of some time ago, and from across the water.

The doctor made a test of the relative conductivity of this aluminum alloy, with rubber. Now, of course, we know that rubber is a nonconductor and that it is injurious to the tissues of the mouth for that reason; but just of what value the test he made will be to us, I am not prepared to say. It does not appear to me that it is worth anything more than to convince us of the nonconductivity of vulcanite.

One point touched upon by the essayist that struck me very forcibly was with reference to the average dentist of to-day looking with scorn upon those who do their own plate work and commending those who are sending out their work to the various laboratories or to others to do it for them. I would like to condemn

that practice. I do not believe there are many of us who care to do plate work at all but what can find more or less time to do a portion of it. There is a great deal that can be done just as well by others who are not familiar with the conditions, but when it comes to the preparation of the impression, or the model, and when it comes to the grinding of the teeth and waxing of the case and even to the partial filing up of the ordinary plate, it is impossible for any one to do that who is not familiar with the conditions of the case; and so I emphasize the point he makes as a just one, that that practice should be condemned. There are those special points with reference to the construction of an ordinary plate that each dentist should do himself, and if he does not do it himself, he is not successful in that line of work. There is no question of that.

With reference to swaged aluminum work, which some years ago was thought to be the coming work because of the ease with which it could be constructed and because of the cheapness of it, which placed it within the means of most any one, I must say that I think we have very little place for this work, the objection being that it is almost impossible to securely attach the rubber to it so that the heat of the mouth will not cause it to draw up and crawl away at the edges of the plate. I have used all of the various instruments for punching loops, etc., for attachment of vulcanite to swaged aluminum bases, and I will say that I have never seen a plate that had been in the mouth from one year to a year and a half or two years but what the rubber had sufficiently drawn away in places to admit of fermentative matter, which makes it particularly objectionable. The rim on a plate, both inside and outside, is an absolute necessity; and until we can solder aluminum, we will never be able, I think, to successfully use swaged aluminum plates.

With regard to the work that the doctor has presented to us, this casting of aluminum alloy, I want to give him credit for having made marvelous progress in that line. I have been familiar with his work for the last three years, pretty nearly, and with his untiring efforts in trying to get a metal that he could successfully cast, that would be successful in the mouth.

I have not seen a plate that the doctor has cast in the last year or year and a half that has come out badly, and I have probably seen him cast fifty or sixty. I have not noticed one failure in that number, which shows that he can do what he says with

reference to casting. There is a particular advantage in cast plates that we do not get in any other plate with the possible exception of vulcanite, and that is that it is cast directly upon the first model, which insures us a much better fit than one made from the second model. If you get up dies to swage the base, the die is the second model, and there is more or less change taking place as you progress from the original model in the three or four different steps necessary, and a big advantage of the cast plate is that it is cast directly on the first model; for as there is a slight expansion to plaster of Paris, the model is then a trifle larger than the mouth, and as there is a shrinkage to the metal that has been cast when it cools, I take it that this shrinkage of the metal overcomes to an extent the expansion of the plaster and gives us a much closer fit and adaptation than we could possibly hope to get from a swaged plate. However, as we know, a swaged plate can, of course, be lifted all right; but we do know, also, that even a vulcanite plate takes hold of the mouth quicker and better than a swaged plate, simply because it is molded and cast right upon the first model without going through the process of making the dies. I might say, also, that some shrinkage takes place in the die if made of zinc, which would overcome the expansion of the plaster, and I think in many mouths facilitate a better adaptation to the tissues than with Babbitt metal dies, because of the reason of a slight shrinkage.

The doctor spoke with reference to the tissues of the mouth taking more kindly to platinum than to any other substance. I do not know but that may be just a little overdrawn, because I do not believe the tissues take more kindly to anything than they do to gold; they take equally as kindly, however, to platinum, but I do not think more so, yet the latter is hardly as susceptible to oxidation as gold, and if the tissues do take at all more kindly to the one than the other, it is for that reason, but I am not prepared to believe that they do.

The objection to cast aluminum work, if there is any at all, is that it will be impossible, perhaps, at the present time at least, for all of us to have the facilities for doing it. When we are working in metal that fuses as high as that, we must have furnaces and retorts for doing the work, and all of us have not the laboratory equipment and have not the room for the noise that the necessary furnaces would make; and so it may be impossible for us to do

that kind of work now, but I have no doubt at all but that in the future there will be every facility and convenience in favor of cast aluminum work. I know it can be done successfully, because I have seen much of it done by Dr. Brophy in the last few years.

The points that the doctor mentions with reference to short, close bites in which we can fasten on the teeth by casting to them, or even where you cast a solid tooth, are very desirable, as we know how much we often have to grind a rubber tooth down till there is scarcely anything left. This overcomes that and gives you a masticating surface which stands the strain.

As a whole, I commend the paper very highly. I think the society is to be congratulated upon having had presented to it so practical and so good a paper.

Dr. G. V. Black: I have nothing to say except to commend the paper and particularly that part regarding the casting of aluminum. I should be very glad to see that made a success sufficiently so that the young men may take hold of it and really learn to do that work and do it well. I take it the difficulty is to so simplify the process, so fix the process, I should rather say, than to simplify it, that any one may take hold of it and do it well. I think it probable that electricity will help us very much in that work in the very near future. Every form of heating up of the flasks may be done by electric current without any noise or anything disagreeable in the room. I see no reason why that should not be done, it only requires a melting apparatus, or rather the blast be properly arranged for heating up the blast to whatever heat may be necessary. The melting apparatus can be put in shape at once, so that we can melt it by electric current and pour it very readily and the only thing necessary is to arrange a special apparatus for heating up the blast so that it can be done readily.

Dr. F. N. Brown: I have not taken any notes of this paper, as the essayist progressed, and I do not know that I am prepared to discuss it. It is a very excellent paper and I enjoyed it very much.

There is one expression he used that struck me very forcibly, which I have heard years before, and it always occurs to my mind immediately how much we are in need of a nomenclature in prosthetic work that will give us a thorough understanding when we express ourselves along this line. He stated that the plate was held up by "capillary attraction, or whatever you may call it." Now, I doubt exceedingly if the plate is held up by capillary

attraction. It occurs to me that it is held up by union of contact, which I think would be a better definition. I cannot see how we get capillary attraction in a vulcanized plate, or anything allied thereto.

In the next place, I should say that vulcanite has a lasting place in prosthesis from the fact that it is a very useful plate when properly constructed. I think that failures come more from the lack of care of the mouth on the part of the patient, together with lack of proper construction on the part of the dentist. For this reason you will find the dentist that will make a continuous case is an expert, he does it well. You find the average man making vulcanite plates at a nominal price, constructing them carelessly, and not properly. You look back fifteen to twenty years at vulcanized plates that were then constructed. They are giving good service and the mouth is in good condition and the plate is in good condition, if the patient is an intelligent one and has cared for the mouth. So I am convinced there is something in vulcanite; again, I think there is something in swaged aluminum. It is much easier made, the average dentist can make it very much more readily than he can the cast plate. If, as I have so frequently observed, we use the pink rubber for our vulcanite attachment, we have the aluminum in the clay composition of the vulcanite with aluminum swaged base, there is tendency to unite and it gives a strong support even on a smooth surface, without any roughing; you will find it is not easily detached. If there is a tendency for the vulcanized attachment to give way, I am inclined to think that it is from the fact that the aluminum basis is too thin, it has not sufficient thickness in gauge.

I do not know whether there is anything more that I wish to say except this, that I am always in favor of encouraging a work that has a tendency to give us more artistic results, better results every way and make better workmen of ourselves in that line. I certainly have enjoyed the paper very much.

Dr. C. E. Bentley: I should like to ask one question. Dr. Brown said he did not believe that capillary attraction had any place in the retention of the plate in the mouth, or was not responsible for it, but said that contact was. Will he please explain what he means by contact? What does he mean, if contact is responsible for the retention of anything, or what does he really mean that contact is responsible for, in contradistinction to capillary attraction?

Dr. F. N. Brown: The definition of capillary attraction—it has been a long while since I looked it up, but if my memory serves me right, we have it from the word which means like a hair, small. We have capillary attraction when we dip a sponge in water, when it absorbs the water or takes it up. We have adhesion by contact when we take two pieces of glass, exclude the atmosphere with small amount of moisture between them. The external atmosphere pressing against the plate, or externally on the plate, the plate being in contact with the tissue, excluding the atmosphere and we have adhesion by contact.

Dr. W. H. Fox: Somewhere I have seen that makers of aluminum cast work have difficulty with the plate after a while—after two or three years—in that the crystallization of the material by casting was so pronounced as to affect the value of it and consequently there is a fracture along the center of the plate, showing that the crystallized metal did not possess enough strength to ride upon the hard tissues of the roof of the mouth. I would like to ask those present who have done this work if they have had any ill luck from crystallization in cast work.

Dr. Brophy: I will answer the doctor by saying that I have had a great deal of trouble of that kind, but never with aluminum. Many of the alloys that I have used have acted very much as he describes, but so far as my knowledge shows, aluminum-silver does not crystallize to any extent.

Dr. Edmund Noyes: It occurs to me that it would be desirable and most welcome to all of us if, in the closing of this discussion, or in the publication of the paper, Dr. Brophy would go a little more fully into detail in some matters of construction and perhaps, also, in regard to the peculiarities and composition of the alloy which he uses, and especially if he will inform us how it can be obtained. The principal object of such a discussion as this is to introduce the use of this work by as many new people who have not heretofore used it as possible, and to that end all of the difficulties, which have evidently been great, and which he has been long in completely overcoming, must be so carefully described and the processes of operation with it so plainly and completely developed that a man who has not done the work may succeed in doing so, and escape those stumbling blocks and failures which have been in the path of the men who have pioneered for us.

There are two or three other things which were spoken of in

the early part of the paper which it seems to me are worthy of some little attention. It is assumed usually that rubber is a deleterious and injurious material in contact with the mucous membrane of the mouth. The proof of it has not been to my mind conclusive. I am not standing here to discourage the substitution of something better for rubber; I am most anxious that it should be done, and I believe that the one circumstance that rubber is a somewhat porous material, not sufficiently dense to prevent some degree of absorption of fluids, is sufficient to account for some injuriousness and much offensiveness in the material. But I have never been able to account to my own mind upon any other reason, for the expectation of injurious results from its use, and I am bound to say that so far as my own observation is concerned, I feel entirely justified in the belief that the injurious effects upon the mucous membrane of the mouth are at least nine parts out of ten due to want of cleanliness, either of the mouth or of the plate.

I to-day had under my observation a mouth which has worn a continuous gum plate for several years, fitting well and perfectly comfortable in the mouth, but that mouth was more red and inflamed than any I have seen for a good while, and the reason was perfectly apparent in the condition of the plate and of the mouth. I have observed that whenever I find patients with rubber plates which are clean, which they show to me with the original polish of the palatal surface maintained by the use of their brush and prepared chalk, so that there are no slimy deposits anywhere, and the mouth equally cared for, in those cases I do not see any inflammation under rubber plates. I am not prepared to say that there are not rare cases in which the rubber will poison the mouth irrespective of cleanliness, but I fully believe that in all these cases of trouble of that sort we must look to the question of cleanliness for nine out of ten of the cases injured. Now, understanding that to be the case, it becomes a very difficult matter to discriminate causes in such a way as to say that this mouth is poisoned by the rubber plate instead of being injured by want of scrupulous cleanliness, and I have always felt justified in reserving a doubt in my mind and in calling in question the assumptions and the statements which are regarded as proofs that rubber plates poison the mouth.

A very frequent and principal reason for the better appearance of mouths under metal plates than under rubber ones is that the swaging of the metal plate leaves it with smoothly rounded

angles and corners over the rugæ of the mouth, while the casting of the rubber plate leaves it with sharply defined angles and one plate is cleaned with much less effort with a brush than is required to keep the other equally cleaned, so that in the average cases of ordinary persons, metal plates will be much cleaner than rubber plates. That will account for most of the conditions of various mouths under rubber plates as compared with metal plates.

I wish very much that we could substitute a better material, but what has been said and what we frequently hear about the degradation of professional standards by the introduction of so easy a material as rubber takes an inadequate view of the case. The real merit and standing of prosthetic work is not in the mechanical details of making a rubber plate or a gold plate or an aluminum plate, but it is the painstaking art which reproduces the features and the masticating apparatus suitably for the person for whom we are at work; and if we can diminish the labor and time and skill and attention that is necessary upon the pure mechanics and can, by that means, divert more of our time and thought and skill to the art, why then even the cheap, easy material may be made subservient to the advancement and elevation of the work. It is not the question of material, gentlemen, it is a question of the perception of what we need to do for these conditions that come to us. It is a very different thing to restore a mouth and face to its proper expression of features, its proper effectiveness of speech, its proper usefulness of mastication, from what it is to take an impression and a die and set a lot of teeth around the edge of a plate; it is a very different thing, and it is these things which take the time. It may easily be worth $25 to make a set of teeth that goes into a face and belongs there and not pay you as well as to make a set of teeth for $5 that will stay in the mouth and bite against the opposing teeth. The man who gets the highest price may spend more than five times as much work over it as the other man does and more than one hundred times as much capacity and skill and real earning power if he devoted the same talents to some other line of professional work.

Dr. Brophy (closing the discussion): In closing this discussion I shall say but little; in my paper I boldly advanced ideas which I hold in regard to plate work. I did not expect every one to agree with those ideas, and I concede every one a perfect right to disagree with them if they are so dis-

posed. After listening to the discussion, however, I am none the less firm in the conviction that the interests of humanity and the dental profession demands abandonment of vulcanite base plates. Is it known to these gentlemen who have in a half-hearted fashion championed the use of rubber, that the medical profession criticises, if not specifically condemns our profession for the practice of using vulcanite for plates? It should be known by them, and is it wise to persist in a practice that meets with such opposition? The dental profession is simply in a vulcanite rut, from which it is somewhat difficult to get out; but it can get out, and the sooner it does so the better for all concerned.

In regard to the question of the space required, and the noise made by the apparatus for doing this work, neither of which I regard as particularly condemning considerations, the suggestion of Dr. Black that there is no reason why electricity may not be utilized for doing it, is a good one. I have considered the construction of an electric furnace for some time, and expect soon to have one in readiness to test. Such a furnace undoubtedly is feasible, and its advent may be expected at no very distant day. In regard to the desire expressed by Dr. Noyes, I would say that it would give me great pleasure to acquaint you with all details of my method of making metallo-plastic plates. I could not,however, do so in connection with other things I have had to say to-night. I am very glad, at all times, to impart to any one interested full particulars of the method which I pursue, or give them practical demonstration if they will visit my office.

Proceedings of the Minnesota State Dental Association, Held at Northfield, July 25, 26 and 27, 1899.

The sixteenth annual meeting of the Minnesota State Dental Association convened at 2 o'clock P. M., on Tuesday, July 25, 1899, at Northfield.

The meeting was called to order by the president, Dr. L. P. Leonard. The president introduced Dr. E. G. Riddell, of Northfield, who, in the absence of Mayor Skinner welcomed the members to the city.

ADDRESS OF WELCOME BY DR. E. G. RIDDELL, NORTHFIELD.

Mr. President and Members of the State Dental Association: In the absence of our Mayor, who is out of the city, the pleasure devolves upon me to welcome you to our city. I hardly think it is necessary to tell you that you are welcome at Northfield. We are going to show you by our actions rather than words that we feel gratified in having you in our midst, and that we are pleased and proud that you have selected our city for holding this meeting. It is not necessary for me to make an extended speech, but I will simply say that we are very glad to have you here, and trust the meeting will prove pleasant and profitable to all.

RESPONSE BY DR. CHAS. H. GOODRICH, ST. PAUL, CHAIRMAN EXECUTIVE COMMITTEE.

Mr. President: In rising to reply in behalf of the Minnesota State Dental Association to the very cordial welcome and reception the members of this association have met with, I wish to say that we were very much surprised and gratified on getting off the train this morning to see such a large and fine representative gathering of men at the depot with private conveyances and carriages. Usually in coming to a city of this kind we have to take street cars and find our way about as best we can, but here they braved the heat of a summer day and met us in a way that opened our eyes. Within two or three feet of the door of the hotel one of the gentlemen of the city grasped my satchel and would not even let me carry it into the hotel. (Laughter.) But such a reception is not a new thing to this city. Nowhere can we find a city that is farther advanced in literature, science and art than this city of Northfield, and it is very fitting that this State dental association should meet here and discuss the scientific researches and phases pertaining to our profession. I think if the mayor were here to welcome us he would offer us the freedom of the city, and he would very likely have some stretchers convenient at various street corners provided with suitable attendants so that in case any of the guests were overcome by the fierce heat of the day, they might be properly taken care of. Again permit me to thank you for this very cordial reception.

Owing to the absence of the vice president, Dr. G. S. Monson, Dr. C. H. Goodrich, chairman of the executive committee, was

called to the chair during the reading of the president's address. (See page 795.)

DISCUSSION.

The CHAIRMAN: The president's address is now open for discussion, and I trust you will give it thorough consideration.

Dr. W. N. MURRAY: I do not know that there are any points in the president's address that I would really take issue with, yet I think there are some features of the address that might, perhaps, bear a little investigation.

I think on the subject of amalgam we have some very fine results of scientific research published by Dr. Black, which I think any intelligent dentist could follow with satisfactory results, and I think our researches on that subject alone are well worth perusal by dentists and should be a guide to all of us. I think we have one member of this society (Dr. Bailey) whose information on this subject of amalgam, if we could get him to give us a paper, would be of intense interest and value to us all.

In the matter of comparing the profession of dentistry with that of the law, I can hardly agree with the essayist. I hardly believe it is possible to successfully compare the profession of dentistry, where so many different mechanical ideas are represented, with that of the law, which is along one line only, and I do not believe we could get a single idea from the comparison that would be of value in the practice of dentistry.

Dr. H. L. CRUTTENDEN: I have nothing to say in regard to this paper, but I think we should, as far as possible discuss these papers thoroughly. When we get together in our meetings we should make it an object to discuss papers more thoroughly than we have done in the past. On this afternoon's program there are a number of papers that must of necessity be omitted, and we shall have ample time to discuss this paper. I would like to hear from different men who are competent to discuss the paper, and I think it would be a good plan to call on them.

Dr. J. W. PENBERTHY: I do not know that I have anything to offer on the paper. It strikes me, so far as investigation is concerned, which is going on continually by individuals, to have it done by different societies would not be of great benefit to us; but, of course, that is an open question. Investigation is going on by men who are devoting their lives to this line of research, and committees appointed by different societies could not give the matter

the same attention these men are giving it. We have now some very good authorities, such as Dr. Black, Dr. Flagg and others. While I think the doctor's idea is a good one in so far as it would stimulate private research, yet I do not see how we would be benefited by the work of committees appointed by different societies. Whether they would reach an extent sufficient to compare with the works that are given us is doubtful to my mind, although I do not wish to put a stumbling block in the way of progress. The doctor thinks the results would be published in the proceedings of this society and other societies and in that way would come before the profession at large.

The CHAIRMAN: It seems to me the paper of our president did not deal entirely with the subject of amalgam, and there are other phases of it which might be discussed with advantage.

Dr. H. L. CRUTTENDEN: It is customary to have papers like this discussed before the society and the best papers sent before the American Dental Association to be there discussed and to be formulated in such a manner as to be easily got at, the same as the papers we see fit to publish in our report, which comes out in pamphlet form and is read by many dentists. If this paper is thoroughly scientific it is probably published in journals like the DENTAL REVIEW, and many northwestern dentists read that; otherwise it would be no object. That, as I understand it, is the point made.

The CHAIRMAN: The plan struck me a good deal the same as the methods employed by camera clubs who make and publish slides. These slides are sent to different clubs throughout the United States and Europe. They are first submitted to a committee and then they are sent out to different clubs, and in that way clubs get the best of what has been done. As I understand the doctor, his idea was that any paper or set of papers which this society should send to the American Dental Association, and which were deemed of sufficient scientific value, would be published by that association, and every dentist could get those productions and keep them on file.

Dr. W. N. MURRAY: The main feature I was discussing in this paper is that in which he would establish a universal cavity preparation, a scientific preparation that all could follow, and for amalgam he would establish a formula that would be scientific. My remarks along those lines meant to convey the idea that even

among the best men there would be a very great difference of opinion, and the doctor's comparison with the supreme court and its decision in a matter I hardly think is a good comparison. I hardly think it would be possible to formulate such a plan as he speaks of. I think, however, the idea of sending these papers to the American Dental Association is an excellent one. I think they could be put in such shape for reading that the best things could be got at quickly.

The CHAIRMAN: We will close the discussion by referring the paper back to the president.

President LEONARD: *Mr. Chairman:* I question if most of the gentlemen grasped the idea or plan I had in my mind, and the lack of comprehension was probably due to the poor way in which it was presented to you. Although Dr. Bailey may have performed a great number of tests, I do not know it, and if there is any man here who does, I would be glad to have him state where we can get them, and where we can get other valuable authority. The same is true of Dr. Black's tests; he has performed a great many experiments which it is difficult to get at. I realize they would do us a great deal of good if we knew just where we could get at them. If we could find Dr. Black's experiments in the proceedings of the American Dental Association, or if we could have a synopsis of his works, together with that of other scientific men working with him, it would be of great value to us. There are scientific men in this State who are capable of conducting experiments. We have apparatus in this State sufficient to make a great number of tests. Supposing Dr. Murray wanted to take up something and investigate it to a finish, he could formulate his plan, bring it before this society, and we could refer it to a committee who are making a specialty of that same thing. They could work together for a year or two years and then come before this society and make their report, and in that way we could have it published in our proceedings. Dr. Murray may know something, I may know something, but there is no way of getting the knowledge before the profession unless some such method is adopted.

A paper was then read entitled, "A Porcelain Faced Gold Crown," by Dr. H. L. Cruttenden, Northfield. (See page 789.)

DISCUSSION.

The PRESIDENT: It has been suggested that Dr. Moody open the discussion.

Dr. F. E. MOODY: It is very unfortunate that I am selected to discuss this paper at this time without any preparation and without knowing anything about the workings and methods employed. I must say I have not attempted to make one of these crowns; it is the first time I have seen it, yet I have seen one of the men for whom Cruttenden made a crown. No doubt this method of making crowns is a good one, yet it takes a great deal of time, and before discussing the paper I should like a little time to study the paper and the workings of the method. I will, however, say just a few words. One great objection that I can see at this time is to get the proper occlusion, as it must be made in the mouth. The articulation is made right in the mouth. I want to ask one question, and that is, how do you make the occlusal surface?

Dr. H. L. CRUTTENDEN: I used to make solid cusps out of solid gold. Now I make it out of thinner gold and fill with solder on the inside. I carry the fitting of the occlusion up to about that point in the mouth. (Indicating.)

Dr. F. E. MOODY: In my opinion, I can see no advantage in this crown over that of making the crown in the way of Richmond with an occlusal surface to it. Then you can make a solder of a high grade of solder better than this one, and it is better on that account. I do not see that the position would be stronger, and as it would take a great deal more time, I cannot see that there is any advantage in this method over that of any other. Not only that, but the way the root is prepared takes more time and more work in every particular. I must acknowledge I know nothing about this, and I cannot discuss it as it should be discussed. I do not know that I can say anything more upon the subject, as I know absolutely nothing of the workings of the method, although I would like to hear some one discuss it more fully.

Dr. T. B. HARTZELL: I am much pleased with the method and like it very much, and I can see some advantages. In the first place, you run absolutely no danger of splitting the root, and in the second place, you have the advantage of a shell crown or porcelain crown. We all want a plain crown because of the ugly appearance the gold has in the mouth. A man with a heavy mus-

tache does not care whether he has a gold crown or porcelain. I like the idea of putting porcelain on in that way, and I can see from experiments I have done without solder at all, that this crown could be very easily adapted to that kind of work. We always get ideas in comparing notes. We can take a piece of work of that kind and put it up with porcelain without any solder at all, thereby avoiding any possibility of discoloring the porcelain, and I have been doing that with a similar crown without solder. I fill those holes with graphite: I take a lead pencil, sharpen the point and break it off; that is, I turn it over, put on the porcelain and then rivet it down, and in that way you have the advantage of a porcelain crown without putting any heat on at all. I must thank the doctor for the idea.

Dr. C. W. NUTTING: Some nine or ten years ago, while my sister and myself were on a visit to Northfield, I visited Dr. Cruttenden's office, and as my sister needed a new crown, he suggested that I put one on under his instruction, and I put a crown in her mouth like this. I think the doctor will recall the occasion, and I must say that on investigating that crown recently, I find it is the best one she has in her mouth. I have done some other work for her and put in other crowns, but this has kept its place on the arch without the wall or flow that he spoke of. So far as the disadvantage Dr. Moody spoke of is concerned, the thought struck me that you could solder the porcelain filling in afterward with fourteen carat gold. You could take a dummy and crown it and invest it and articulate it, then solder your bridge together and solder in your dummy afterward with fourteen carat gold if you liked. I have made few of those crowns; the reason I did not make more is because they are so difficult to make, as Dr. Cruttenden said. The articulation I make by taking some soft wax and putting it in here (indicating); I do not bend it up hard that way, but I file the crown down with a good deal of waste of gold. I have found it to be a very serviceable crown, and I think we ought to thank Dr. Cruttenden for bringing the subject before the society.

Dr. T. B. HARTZELL: One feature I meant to speak of particularly, and that is in regard to its strength. Very few of us give much thought to the enormous stress that we meet with in the mouth, and this crown is admirably adapted to stand severe stress. If you stop to think a moment that the ordinary individual in the course of eating dinner must masticate from six to eight hundred

times, and the average of us close the dynanometer at 125 pounds, and some people at a great deal more than that—I know one man who closes it at 240 pounds without much extra effort—and, as I said before, when we stop to consider the stress in a single meal it is something enormous. Suppose in the course of an ordinary meal we masticate 500 times and we use a minimum stress of ten pounds. If you have ever come across a bird shot, you realized that you certainly used ten pounds without any scientific experimentation at all. Suppose you do masticate 500 times during a meal, that is 15,000 pounds a day. The only wonder is that the work stands as well as it does, and having this piece in certainly is a good feature.

Dr. L. C. DAVENPORT: One of the strong points is where he puts gold foil on these different points and when he solders it breaks there and makes a good joint; it makes a tight joint.

Dr. C. W. NUTTING: I would like to say that the crown I mentioned has been under my observation continuously every year, that is, the one made for my sister under Dr. Cruttenden's direction. She is very hard on her teeth, and this crown has stood the stress better than any other crown. It stands right by the side of the gold shell crown I put in for her.

Dr. W. N. MURRAY: I would like to ask Dr. Cruttenden what would be the objection to backing up that porcelain with pure gold.

Dr. H. L. CRUTTENDEN: It would not be necessary, you have a backing here. (Indicating.) It is not necessary to use a high grade of solder. A low grade of solder will hold it just as well as a high grade, just enough so that these pins will attach to it. In reply to Dr. Moody's question, in bridge work you can use high grade solder if you wish. I use it when constructing a bridge, but in a single crown I use a low grade solder; it is easier to flow.

Dr. W. N. MURRAY: Do you put the solder clear around there?

Dr. H. L. CRUTTENDEN: Yes, sir.

Dr. W. N. MURRAY: I should think the backing would be more apt to break out there.

Dr. H. L. CRUTTENDEN: In this crown there was no backing put in. I simply set a piece of porcelain against a piece of metal, it is not tight at all; I can crowd a thin piece of paper between, yet that tooth has never shown any sign of leaking, on account of the backing being a part of the crown, which is all closed.

Dr. F. E. Moody: I do not see how you can get the solder to flow evenly all round.

Dr. H. L. Cruttenden: All I wish is to have it about the pins. I had some cases where this opening was left here where the top is attached to the band just back of the porcelain (indicating) and I wanted to fill it. I put a little foil in there and it was some time before I discovered the effect. When that gold foil went in it was soft, and after it was soldered it came out, it was solid. It is not necessary to put that foil in there, but it looks better.

Dr. A. C. Rosenquist: I have done some crown work similar to that, only I go at it in a little different manner. I have made a complete gold crown first and then sawed the front out and then backed it up with thin gold and waxed it and invested it; it is an easier matter to back it.

Dr. C. H. Goodrich: I know there are cases where a crown of this kind is the only thing you can make. I believe more dentists do not make a crown of this kind because it has been added to from the time crowns first commenced to be made. I see no advantage where you have a root with a large canal in the making of a crown of this kind over a Logan crown. I believe if all the time and skill put on was reflected in the direction of making plain Logan crowns, and dentists would give proper attention to the work, it would be safer in the end, for there is no band surrounding the root of the tooth whatever. I think the failure of the Logan crowns is due to the fact that the time and attention of the majority of the profession has not been brought to that crown, but has been directed to this crown because it is a more beautiful crown to be handled. I believe the time is coming when there will be more papers and discussions and the placing of porcelain crowns than there have been in the past. I have seen work done by Dr. Cruttenden, and I see no advantage in backing it up with gold over the plain crown when it is as hard to make as this is. I believe the time is coming when this crown will be but a detriment.

Dr. O. A. Weiss: In regard to this crown as described by Dr. Cruttenden, and the one that is usually made, when finished they are practically alike. The point has not been referred to, but all the difference I can see between the crown as Dr. Cruttenden makes it and the crown as generally made now and described in

our text-books, is that Dr. Cruttenden solders the backing into his crown and then puts his filling in; but when finished they are alike; there is no difference, it is simply a different way of doing it. There is one thing I have an objection to, and that is the method of making the articulation of this crown. I see no reason why you are compelled to make the articulation of this crown in the mouth. I would use the ordinary crown articulator and take the bite in the ordinary way.

Dr. L. P. LEONARD: I think there is a large field for just such crowns or bicuspids and molars. There is an advantage where the lingual wall is intact or nearly intact The great difficulty with the ordinary or Logan crown is that it is necessary to remove all of the crown substance of the lingual and buccal wall. Where we can leave the lingual wall intact, it certainly leaves the root much stronger. There is a method I have practiced, something like this: Just saw out the buccal portion of a gold crown; I make a nice little vacuum in my porcelain, and then put in my gold foil. I am indebted to Dr. Lyon for this idea of gold foil. If you have the lower portion the hardest, it should be the hardest gold. Scientifically, that should be heated on the porcelain side first. This can be soldered in here (indicating) according to Dr. Peck's method of placing it in the frame, without any backing and taking it out again. Heat the porcelain first, put it into your frame and you can do all your soldering after putting it in there, and then gild the occlusal surface of the crown, and in a very few minutes without investing at all by putting the porcelain into the frame and putting the solder around where you wish.

The CHAIRMAN: If there is nothing further we will ask Dr. Cruttenden to close the discussion.

Dr. H. L. CRUTTENDEN: I have only a word to say, as I have already answered most of the questions asked. I just want to say a word in regard to Dr. Goodrich's idea about the Logan crown. I think the Logan crown is all right, provided it is bandaged. I do not think the Logan crown is a joy forever. I have seen many roots split, and I have seen many cases where they have been fitted as tight as anything could fit.

Dr. C. H. GOODRICH: How many roots have you found split in the last fifteen years in your practice ?

Dr. H. L. CRUTTENDEN: I have seen one that was split, a central incisor. It was put on by a Minneapolis dentist and the

gentleman would have given any amount of money if he could have saved that tooth.

Dr. C. H. GOODRICH: How many Logan crowns have you seen split in the last fifteen years?

Dr. H. L. CRUTTENDEN: O, give me time to count them. I think the Logan crown is all right in its place, it can be kept from splitting the root. It was the same with the old Howe crown we put on years ago. The weak point was the joint; between the porcelain and the root it is necessary to have a band to protect that portion. Dr. Leonard spoke of soldering the filling and allowing gravitation to draw it down, the solder flowing down to the foil. There is no objection to putting a band around; I have put a wire around some; I did so in one case, but I said afterward I would not do it again.

Dr. W. N. MURRAY: Do you invest them in plaster?

Dr. H. L. CRUTTENDEN: I invest in marble dust and plaster.

Dr. MURRAY: Why could you not invest in asbestos paper?

Dr. CRUTTENDEN: It could be done. I said in my paper I had not had a failure. I have had a failure in one or two cases with the roots or pins. Dr. Goodrich was down here a few weeks ago and I had a case that day. I have had failures in this pin not holding in the root and coming out with the crown. In this case I speak of when Dr. Goodrich was present that Howe post was worn down, something supposed to be impossible, so that at this point in the cement (indicating) it was not larger than a hair, so I could break it off, while in the root it was just as perfect as if put in yesterday. I took out the post and cleaned out the surface. I put in a new pin and it fitted in that root as perfect as ever. The root had kept perfectly intact while something had decomposed the metal in the crown. I have had several cases where the pin had come out of the root.

Dr. W. N. MURRAY: Have you not had trouble with these Howe posts turning the root green? I use to use them, but I do not do so any longer.

Dr. CRUTTENDEN: Yes, I have had discoloration, but it was out of sight and made no difference.

[To be continued.]

The Dental Review.

Devoted to the Advancement of Dental Science.

Published Monthly.

Editor: A. W. HARLAN, M. D., D. D. S.

Associate Editor: A. E. Morey, Ph. B., D. D. S.

Join the Protective Association.

From the present status of litigation we believe that dentists who are not members of the above association are making a mistake and they will do well to send their application to Dr. J. N. Crouse, 2231 Prairie Avenue, Chicago.

A Plea for Universal Root Filling.

Some of the departments of dental practice are well fixed in the professional mind. At the present time, however, the method of root filling is not universal, as we are told that roots may be and are filled with cotton, wood, lead, copper, gold, oxyphosphate and oxychloride of zinc, gutta-percha, salol and various compounds having a medicinal flavor, to say nothing of different plans of mummifying pulps so that root filling will be obviated. Why this diversity of practice obtains we are unable to state. If it were possible to settle upon one practical certain method the matter of root filling would soon become easy and much time would be saved. It is only in exceptional cases that we are called upon to devise extraordinary methods. Why not decide to fill roots of teeth with gutta-percha or lead or tin? For our own part, at this time we believe that the most successful method is to use gutta-percha in some of the numerous plans now in use. We do not think a medicine or drug is needed as a component part of a root filling, as the object is to hermetically or mechanically fill the root to the apex. If any other object is sought to be obtained we do not know what it is. If the foreign matter is removed and the root is disinfected what more is needed? Our readers are invited to express themselves on this interesting topic.

DOMESTIC CORRESPONDENCE.

Letter from New York.

New York, November 9, 1899.

To the Editor of The Dental Review.

Dear Sir:—The "dental ball," so to speak, was opened for this fall with the October meeting of The New York Institute of Stomatalogy, at the office of Dr. John A. Schmidt, of Brooklyn, Dr. Chas. A. Kimball presiding, in the absence of President Bogue.

Despite the fact that Brooklyn Borough is a portion of New York City, the distances from point to point are so great, and the amount of time required to make the various connections so excessive, that many men do not attend meetings held as far from the accepted center of Manhattan, in consequence the attendance was *very* slim. Some of the members residing in Brooklyn, within easy distance of Dr. Schmidt's, did not put in an appearance. It was unfortunate for the institute's opening meeting, inasmuch the principal essay of the evening was by Dr. Wm. Trueman, of Philadelphia. When one comes such a distance to read a paper upon which he has expended much labor it would seem only fair that the membership should turn out in force, even at some personal discomfort.

Dr. Trueman's paper was "The Status of our Profession and Its Educational Methods in England as Shown in Recent Publications."

He had gone over the ground with such care that he was able to make what is so frequently dry and uninteresting *very* attractive. Especially was it to be noted that the British Dental Society is large in numbers, *over one thousand,* that it *maintains* a strictly *independent* dental journal, which is on a paying basis, and, beyond all else, has a large fund for charitable purposes and uses said fund to good advantage. In this last conclusion, Dr. Trueman cited the case of the death of a dentist, who was a member of the society, leaving his family in need. The son was studying dentistry, but could not continue his studies. It came to the knowledge of the officers of the society, the fund was drawn upon, the mother assisted, the son carried through his studies, and now practicing, and undoubtedly returning many times what he received.

Dr. J. G. Palmer, of New York, presented the subject of "Swiss Pivot Broaches," describing their special use in preparing root canals as well as filling them. He also explained his method of drawing the temper and showed some samples of selected sizes. Briefly, the method he uses in drawing the temper is to lay some fine asbestos on a sheet of zinc, place a quantity of broaches on the asbestos, cover them with more asbestos, place over any convenient heating apparatus, and heat slowly for perhaps an hour, possibly getting the heat up to a dull red glow, then allowing them to cool slowly in the asbestos until perfectly cold. The instruments are then *uniform* in temper, or softness, as one pleases to call it.

This meeting was on the first Tuesday in October.

On the evening of the second Tuesday, the First District Dental Society held its first fall meeting at the Academy of Medicine, 17 West Forty-third St., Manhattan Borough, President W. C. Deane in the chair. "Neoplasms of the Mouth, Gums and Lips," by E. Eliot, Jr., M. D., of New York, was the paper of the evening, and a very excellent one it was, too.

Dr. Eliot is a practitioner of medicine. It should be encouraging to the workers in our professional ranks, especially in the east, to note the number of men from the mother profession —medicine—who condescend, if not willingly accept invitations, or seek them, to address meetings of our dental societies. Dr. Eliot did not seek this opportunity, but it is hoped that the time is near when our professional colaborers will anxiously give us all we can devour, and let us hope that we will be able to digest it all within a reasonable time.

As it is now only a few seem able to discuss the medico's subject, relative to dental pathology, surgery, medicine, or something else, dental though it be.

But we are being educated in the right direction and possibly the present and coming dental educations are and will equip the future practitioner with the requisite knowledge to argue subjects on their weak points, or will this be left to the dental or oral specialist?

Dr. Eliot's paper seemed too deep for discussion so he was plied with questions, which is always a very glaring way of expressing ignorance. Dr. Eliot showed a patient for whom he had operated on tumor of the soft parts of the oral cavity and described another which he had been in hopes of showing where

he operated, removing the ramus on one side of the jaw and many of the teeth but leaving a narrow ridge of bone, the base line of the body that the contour of the face might be preserved.

Dr. Littig congratulated Dr. Eliot on his judgment in doing this.

The number of applications for membership in the First District Society this month reached the unusual number of twelve, all endorsed by Dr. Francis. Dr. Crouse should have this recruiter in his fold.

The Second District Society will celebrate another anniversary event in January. The First District Society of New York and the Central Dental Association of New Jersey always receive invitations thereto and both have again accepted.

On the third Tuesday occurred the first fall meeting of the Odontological at the same place as the First District, viz., Academy of Medicine, 17 W. Forty-third Street. President S. G. Perry in the chair.

This was a great meeting for the first of the fall. Attendance was good, and representative.

As was the custom last winter, afternoon clinics, beginning at 3 o'clock are to be held on the afternoon of the regular day of meeting under the exceedingly able management of Dr. J. F. P. Hodson, chairman of the Clinic Committee.

The clinic on this occasion was by Dr. George Evans, demonstrating the Jenkins porcelain in operations in crown work, and incidentally showing many little devices which he has originated.

Dr. Evans is a very happy clinician. He can work and talk and make his audience comprehend just what he means. No one can look on at a clinic where he is operating and go away feeling that he has wasted one moment.

Dr. Hodson in reporting the clinic in his inimitable style, paid Dr. Evans a very just compliment concerning his abilities as a clinician as well as a workman.

Being then called upon to explain his work of the afternoon, Dr. Evans gave a detailed account of his manner of making a gold crown, depressing or indenting the labial or buccal aspect, and fusing Jenkins body thereon, making a very esthetic piece of work. To make sure of the porcelain holding to the gold he punches holes in this indented or depressed surface. The examples shown were very nice. That which appealed most to our

fancy was one in which he had used a regular canine facing, cutting off the pins, fitting it to the depression and then fusing body around it to attach it to the cap; the general appearance, color, etc., was very attractive. The discussion which followed on the uses of porcelain instead of gold was very general and prolonged. Among those who took an active part in the discussion were Dr. Gaylord, of New Haven, Conn., Dr. Van Woert, of Brooklyn, and Dr. Littig, of New York.

Dr. Van Woert said he had been able to obtain platina rolled to the two-thousandth part of an inch. That by annealing this in an electric furnace *over slacked lime*, he obtained such ductility that he could manipulate it wherever one would usually use pure gold, and thus could use higher fusing bodies and obtain better results.

His method of making the matrix is quite unique. Forming some modeling compound into a pencil with a pointed end, he warms the point and pressing it into the prepared cavity obtains an impression. Cooling this, he *slightly* warms another piece of compound and pressing his impression into this, has a die and counterdie of modeling compound *quickly* made. The platina is as soft and ductile that he can actually swage it with these dies. Then when placed in the cavity the matrix fits so nearly that further burnishing to completely adapt it is not likely to tear holes in it. We have since seen some platina recently put on the market, supposed to be the *five-thousandths* of an inch in thickness. Dr. Van Woert also spoke of having used *hydrofluoric acid* to *etch* the surface of the inlay so that the cement sticks to it much better than to the glossy, smooth surface. By coating that portion of the inlay on which it is desired to retain the smooth, glossy surface, with wax, the acid is readily applied.

It is very evident from this meeting, and others of a like nature held last winter and during the summer, that porcelain inlays, as Dr. Perry aptly remarked, "have come to stay."

Apropos of which, here are two clippings from leading New York journals—the larger one from the *Herald*, the one about "glass" from the "Woman's Page" of the *Tribune*.

They appeared about a year and a half ago, and show how easily the "dear public" can be lead by newspaper notices:

GOLD TEETH ARE BAD FORM—WHITE METAL OF IVORY HUE FOR FILLINGS.

Fashion's new fiat is that there shall be no more gold in teeth. Gold in the midst of a "row of pearls," the leaders say, is horribly conspicuous, and it is very bad form. None of the yellow metal should show when a society belle or beau laughs, and such a thing as half a front tooth of gold must no more be seen.

It is still allowable to use gold where there is no possibility of its showing, but in any other case the new rule of fashion is exceedingly positive.

It is not proposed that where gold is already in place it should be taken out, but the "orders" are to use other materials from now on, especially in the case of the upcoming generation.

In the place of gold the fashionabie dentists are now using a white metal that hardens very quickly, and when hard *looks precisely like the tooth itself.*

"Glass, it is said, is to be employed as a filling for teeth. It is less conspicuous than gold, and it bids fair to be popular. It is manufactured by a patented process, and is *soft and malleable.*"

The one concerning "white metal" was brought to me by a patient as something "just out." That brought to mind an occurrence in our earlier years. A lady who had had some work done in central Pennsylvania asked us as we were about to fill a cavity with gold, if we would "please use *diamond gold.* Informing her that we knew nothing of it, she insisted that all her gold fillings were of that form of gold, that it contained diamond dust and was the latest and best. If we did not have it and could not get it, she would go elsewhere. In vain did we show her "crystal gold" and explain what we knew of foils, etc. "Diamond gold" she would have or none, and so went elsewhere.

The discussion on the clinic was very interesting, and it was a late hour when the orator of the evening, Dr. C. A. Marvin began his "Review of Forty-five Years of Dental Practice."

It is no wonder that he has been spoken of as the "silver-tongued Marvin." It was a great pleasure to listen to his melodious voice as he graphically recounted memories of the past in dental practice, showing how our profession has marched on and on and on, ever progressing toward better things. There could be no discusion of such a paper, but in the "symposium" that followed Drs. Wm. Jarvie, A. L. Northrop, G. A. Mills, C. S. Stockton, O. E. Hill, and others, took part in recounting their share in the work of the last half century. The Odontological has reason to be proud of its opening meeting this fall. The chairman of the Executive Committee, Dr. Walker, gave a slight intimation of the many good things to be expected this winter

showing that the Executive Committee did not disband during the vacation period.

The first meeting of the Central Dental Association of of Northern New Jersey was held at Newark, N. J., Monday evening, October 9, with President Hardy in the chair. The usual pleasant dinner preceded the event.

Dr. Louis C. Le Roy read a paper entitled "Some of the Minutiæ of Dental Practice," which we understand was well accepted.

The next meeting of the New York Institute of Stomatology takes place on Thursday, November 9, instead of Tuesday as heretofore owing to election day interference. Dr. J. Morgan Howe will give his parlors for use for the occasion. Dr. C. B. Parker, of Brooklyn, will explain his method of operating for removal of part or all of the maxillary bones with special reference to the after treatment for preserving the facial expression.

Such good men as Drs. Curtis, Lilienthal and Dawbarn are to discuss the paper and another essay is to follow. The meeting promises to be a good one.

About a week ago a circular letter was received bearing the names of a dozen or so of our prominent dentists stating that the organization of a corporation of small capital was contemplated.

1. To collect bills for professional services.

2. To maintain a central bureau or office to which members or subscribers to the corporation may report the standing of any or all of their patients to the end that fellow-members and subscribers may be able to ascertain by inquiring at that office the likelihood of fair dealing on the part of new patients.

3. The employment of counsel upon a fixed retainer to advise the members and subscribers upon the law relating to professional matters and to conduct litigations arising out of professional relations.

The circular reads further: "It seems to your subscribers that the foregoing ends, if accomplished, would be of great value to members of the profession, and that they may be attained satisfactorily if a proper business plan be adopted at the outset.

It is believed that if successfully attained the subscribers would very soon, if not at the outset, include physicians and pharmacists, and would in this way tend to establish desirable relations between gentlemen working in different departments of

medical knowledge, between whom, under the different laws regulating the practice of medicine, dentistry and pharmacy, friction now occasionally arises, due to the fact that under certain circumstances these different provinces of medicine seem to overlap from a legal point of view, and so on reads the letter. An audit and correspondence department was suggested in the letter as possibly desirable, which would furnish to those desirous a uniform system of professional bookkeeping and bookkeepers who would relieve the professional man entirely of that part of his work, and also supply him on demand or requirement with the services of a stenographer and typewriter.

Coöperation, criticism, suggestions and attendance of the meeting called to consider the matter were invited. The establishment of such an organization would be vitally the organizing of a professional man's black list bureau, collecting and employment agency, which may be a very desirable thing even though the membership fee be fifty dollars or more per year.

The day of the proposed meeting for organization another circular was received, headed, "Physicians' and Dentists' Protective Association" who evidently learned of the plans of these dentists first referred to, took advantage of the facts he had gathered and is trying to make capital of same.

This gentleman proposes to issue a register every two months and his fee is five dollars per annum for membership.

Yours truly,

THE BOROUGHS.

MEMORANDA.

Use cosmoline on disks.

Dr. J. W. Cormany, of Mount Carroll, was in Chicago in October.

"Newkirk's Rhymes of the States" will make an excellent Christmas present for children.

Dr. E. K. Wedelstaedt, of St. Paul, was in Chicago in October for a few days' recreation.

Dr. J. E. Cravens, of Indianapolis, will from this date devote himself to the treatment of pyorrhea alveolaris.

Dr. J. N. McDowell, of Chicago, is the latest orthodontia specialist, devoting himself exclusively to that branch of the practice.

Essayists will be required to furnish an abstract of papers to be read before the Chicago Dental Society in the future. This will probably furnish better discussions and likewise better papers.

Dr. R. N. Lawrence, of Lincoln, Ill., president of the State Dental Society, was in Chicago recently, working up interest in the next meeting to be held in Springfield, the second Tuesday in May, 1900.

The alumni of the University of Maryland have been requested to contribute to the erection of a memorial tablet for the late Drs. Hayden and Chapin A. Harris. Dr. Uhler, Davis and Grieves, of Baltimore, will receive contributions. Hayden lectured in the university in 1837 and Harris in 1838-9.

INTERNATIONAL DENTAL CONGRESS.

The Transportation Committee of the National Dental Association for the International Dental Congress in Paris next year, are perfecting arrangements for tours and special rates for delegates and their families, and in all probability they will be completed so as to appear in the January issue of the journals. W. E. GRISWOLD, *Secretary.*

Denver, Colo.

OHIO STATE DENTAL SOCIETY.

The thirty-fourth annual meeting of the Ohio State Dental Society will be held at the Grand Southern Hotel, Columbus, Ohio, December 5, 6 and 7, 1899. A good program, consisting of essays and clinics, has been prepared. A cordial invitation is extended to the profession at large.

HENRY BARNES,
Chairman Executive Committee.

To the Editor: In my article in the October REVIEW I noticed one or two errors which I would like corrected. Fig. 13 should have been marked 15 and Fig. 15 should have been 13. Then on page 792 it should read "the evolution of the crown is shown in Figs. 15, 13 and 16." Also in Fig. 9 it is hard to understand from the three ciphers where the gold foil is placed. Those ciphers were marked on the drawing, top, side and bottom of the crown or the entire surface between the porcelain and the crown.

Dr. H. L. CRUTTENDEN.

NORTHERN ILLINOIS DENTAL SOCIETY—MEETING HELD AT ELGIN OCTOBER 18 AND 19.

The Northern Illinois Dental Society had a most delightful, interesting and profitable meeting at Elgin October 18 and 19, 1899. The papers were good and were well discussed. The clinics were fine, and the local dentists did everything possible to make things pleasant, agreeable and entertaining. The election of officers resulted as follows: President, Dr. O. A. Chappell, Elgin; Vice President, Dr. J. W. Stephens, Dixon; Secretary, Dr. J. J. Reed, Rockford; Treasurer, Dr. M. R. Harned, Rockford; Member of Executive Committee, Dr. F. T. Bell, Aurora. Yours truly,

JAMES W. CORMANY.

OBJECTS OF INTEREST.

A circular has been issued by L. Lemerle, vice president of the Dental School, of Paris, calling upon dental societies or individuals to forward for exhibition in the Paris Exposition of 1900, Group III. Class 16, Medicine and Surgery. Objects as follows: Ancient dental instruments or apparatus showing the progress of the century; ancient pieces of prosthesis or other interesting things relating to the development of the art; photographs or drawing, showing the chronology of development; a collection of old books will be made. Dental furniture or apparatus if not too cumbersome. These objects must be delivered in Paris by February 27, 1900. L. Lemerle's address is at 45 rue de la Tour-d-Auvergne, Paris; an interesting exhibit could be made if societies will enlist in this matter.

UNIVERSITY OF MICHIGAN, DENTAL DEPARTMENT.

During the college year 1898-99, 8,000 patients were treated in the operating clinic in the dental department of the University of Michigan. The number of operations performed was 12,382; the number of cleanings 594, and extractions 800. 6,989 gold fillings were made; 1,935 plastic fillings, and 1,919 treatments. The number of crowns made was 129.

In the prosthetic clinic in the dental department of the University of Michigan 798 patients were received in consultation during the college year of 1898-99. Among the cases treated were cleft palate, 4; regulating, 29; repair, 43; reset, 35; full dentures, 58; partial dentures, 38; bridges, 17; crowns, 84.

The receipts of the operating room of the dental department of the University of Michigan for the college year 1898-99 were $4,411.03.

WISCONSIN DENTAL BOARD WILL REGISTER CHICAGO GRADUATES HEREAFTER.

Dr. P. T. Diamond has won his fight and has secured his license to practice dentistry in Wisconsin. "The Wisconsin Board of Dental Examiners," he said, last night, "had refused to recognize diplomas of the Chicago college claiming that these schools did not live up to rules laid down by the National Association of Dental Examiners. The contest was taken into court where one decision was rendered against the board, but the litigation continued. At this juncture the National Associations met at Niagara Falls and the Examiners' Association agreed to conform to the wishes of the Faculties' Association and requested the Wisconsin State Board of Examiners to cease litigation and register Chicago diplomas. The Wisconsin Board, which was represented at the national meeting, however, voted unanimously to continue the litigation. Then members of the Law Committee of the National Association of Dental Faculties' Association later visited the members of the Wisconsin Board and an agreement was finally reached by which all litigation is dropped and the Chicago diplomas are accepted. This will be good news to all Wisconsin graduates of the Chicago schools."—*Milwaukee Paper.*

I herewith send you a synopsis of the second annual meeting of the Southern California Dental Association, held in Los Angeles, on October 3 and 4, in the college building of the dental department of the University of Southern California.

The session was called to order at 9 A. M., with President W. A. Smith,

of Los Angeles, in the chair. Prayer, Dr. R. W. Morris, Los Angeles; President's address, Dr. W. A. Smith, Los Angeles; "The True Position of Our Profession," Dr. H. Gale Atwater, Downey, Cal.; discussion opened by Dr. F. M. Parker, Los Angeles; "The Electric Root Drier as a Sterilizer of Pulpless Teeth and Lactate of Silver in the Treatment of Alveolar Abscess," Dr. W. H. Moore, Santa Barbara; discussion opened by Dr. A. H. Palmer, Pasadena. The afternoon sessions were devoted to clinics. Tuesday evening, October 3, 6 P. M., banquet, followed by theater party.

Wednesday, October 4, 9 A. M. "Educational Work," Dr. J. D. Moody, Los Angeles; discussion opened by Dr. Evangeline Jordan, Los Angeles; "Popular Dental Education," Dr. G. A. Millard, Oxnard; discussion opened by Dr. R. W. Morris, Los Angeles; "The Potency of Favorite Dental Antiseptics," Dr. Edgar Palmer, Los Angeles; discussion opened by Dr. W. C. Smith, Pasadena. Assembly Hall, 2:30 P. M. Question Box.

Business Session. The following officers were elected for the following year: H. R. Harbison, D. D. S., San Diego, Cal., President; L. N. Bedford, D. D. S., Redlands, Cal., Vice President; Emma T. Read, D. D. S., San Diego, Cal., Second Vice-President; L. E. Ford, D. D. S., Los Angeles, Cal., Secretary; Dr. J. M. White, Los Angeles, Cal., Treasurer.

The meeting then adjourned to meet in October, 1900, at Santa Barbara.

During the meeting a committee of three members was appointed, consisting of Drs. R. W. Morris, W. H. Moore and G. A. Millard, to confer with the boards of education of the different counties in regard to having this association appoint dentists to make an annual examination of children's mouths between the ages of six and ten years, they to be furnished with one diagram, so that their parents might know in what condition their mouths were at this important period, and another diagram to be kept for statistical purposes.

Another committee was appointed, consisting of three members, Drs. H. Gale Atwater, F. M, Parker and L. E. Ford, to unite with other associations and societies throughout the country in securing the appointment of dentists in the army.

A legislative committee of five members was appointed, consisting of Drs. F. R. Cunningham, W. M. Garnett, F. M. Parker, A. H. Palmer, of Pasadena, and R. F. Phillips, of San Diego.

This was the largest and most enthusiastic meeting ever held in southern California, forty new applications being received for membership. The association now consists of ninety active members and one honorary member.

L. E. FORD,
Secretary.

AMERICAN DENTISTS IN GERMANY.

From a copy of the *Badische Landesbote* of October 15, kindly sent us by our colleague, Dr. Mittenberger, we take the following:

Meeting of Dentists Licensed in America.—Last Sunday the "Section for S. W. Germany of The Association of Doctors of Dentistry Graduated in America" was organized in this place. There were representatives from Carlsruhe, Mannheim, Baden-Baden, Strasburg, Mulhouse, Basle and Stutgard present. The purpose of the section is to maintain the interests of the

graduates of recognized American colleges, and to promote the scientific development of theoretical and practical dentistry. Officers were chosen as follows: Fred Mittenberger, D. D. S., Carlsruhe, President; E. J. Wetzel, D. D. S., Mulhouse, secretary; A. E. Moritz, D. D. S., Stutgart, Treasurer.

Chicago.—The daily Illinois *Staats Zeitung*, of August 31, publishes among its advertisements the following, which is sent to us in the original, under postmark of September 25.

Business Opportunities. For Sale. Licenses for the State of Illinois. Professional knowledge not required. Price $85. Five sold last week. Schmisser. Randolph and State St.—We only add that this must be some practical joke, for "Schmyser" is the name of the secretary of the State Board of Examiners, and as both names are pronounced alike in English, it is probably a hit at the gentleman who executes the State licenses for dental practice. After that gentleman's lame defense against the grave charges published in *Items of Interest*, for July, 1899, we think it our duty not to leave this article unnoticed.*

Mannheim.—The *Mannheimer Tagblatt*, of October 4, gives the following official notification for the Grand Duchy of Baden:

The Doctorate Acquired Abroad.—A government decree of September 14, decides that Baden citizens who have received academic dignities from any college outside the German empire, in order to use these dignities require the sanction of the Minister of Justice, Worship and Education. This sanction can generally be given concerning academical degrees conferred by certain colleges outside the German empire. For other than Baden citizens, and for foreigners residing in the Grand Duchy of Baden, this decision holds good with the provision that, if they reside in the Grand Duchy only temporarily, or in official business, and in both cases not for gain or for a livelihood, they are simply entitled according to the laws of their respective countries to bear the academical titles. This decision does not affect the statutes and other regulations concerning the habitation of private lecturers at the State colleges. The decree applies to the employment of all academical titles conferred after September 1, 1899.

Editorial remarks.—As all the States of Germany have in this respect followed ihe example of the Prussian government, the bearing of foreign titles is herewith excluded. To use these the sanction of the government must be obtained. This sanction is, on principle, *not* given. Hence the honest American doctorate is henceforth forbidden. The swindlers will still swindle and thus gradually force the existing decent colleagues to lay aside the American title, to avoid being confounded with the others by the public.—*Journal fur Zahnheilkunde*, Berlin. Ritcher, Editor.

ODONTOLOGICAL SOCIETY OF SYDNEY.

The first ordinary meeting of the above society was held at the medical association's rooms on September 11, and was largely attended. The chair was taken by the president, Mr. E. Reading. There were present by invitation several leading members of the medical profession, including Prof. Anderson Stuart, Dr. J. Graham, M. L. A., Dr. Crago, etc. Apologies were

*Dr. Smyser will answer this in the December issue as he is hunting for he above "joker."—ED.

received from Sir Arthur Renwick, Dr. MacLaurin, M. L. C., Dr. Thring, and Mr. Trickett, M. L. C., who expressed their best wishes for the success of the society.

The rules and by-laws passed at the previous meeting were read and confirmed.

The president, Mr. E. Reading, then delivered his inaugural address, the subject being the progress of dentistry from the earliest times to the present. In the course of his remarks the president stated that the objects of the society were twofold—to strengthen the hands of the members of the profession in the mutual effort to get a dental bill passed into law, and to bring the members of the profession into close unity of fellowship. A good dentist who loved his profession must be artistic, and a good mechanic. In the near future it would not be considered necessary for a student to complete his education in England and America. They must train men in their own schools. Forty or fifty years ago ivory, bone and gold, and natural teeth were the principal material used for artificial dentures. This most beautiful part of the art had to be abandoned on account of its nondurability and expense, a set of teeth, upper and lower, averaging from fifty to eighty guineas. Vulcanite then began its existence. At first there were many failures on account of the difficulty of obtaining proper rubber, and also good artificial teeth. The first thing to be accomplished was the passing of a medical and dental bill through Parliament. The two branches should join together in pushing forward this most important measure, for when passed it would oblige every one entering the profession to possess the diploma of the L. D. S., or the full medical or dental qualifications, before he would be entitled to practice as a dental surgeon. It was thought the dental bill would probably be passed by Parliament during this session, and thus enable students to qualify for dentistry within the colony. This being so, it would be necessary to establish a dental chair in connection with the medical school. All medical colleges in England encouraged dental students in their schools. This bill on becoming law would give to every student who passed the university examinations his diploma, and so clearly define his professional status. He thought they should at once present a petition to Parliament signed by all doctors and dentists anxious to see this important measure an accomplished fact. The members of the Odontological Society of England numbered over 400, of whom 350 were members of the Royal College of Surgeons and Physicians, all of whom were practicing as dentists. There were hundreds of other dentists who were not members of the O. L. Society, but were members of the Royal College of Surgeons and Physicians of England.

Professor Anderson Stuart delivered an interesting speech, in which he gave an outline of the efforts made by him to secure the establishment of a dental school in the Sydney University, and also furnished valuable information respecting the dental schools visited by him during his recent tour of America, Canada, England and the Continent.

Dr. Graham, M. L. A., expressed a hope that the dentists bill would be passed by Parliament in the approaching session. In order to strengthen the hands of the government in the matter he suggested that a deputation from the society and the Dental Association should interview the premier and solicit his support for the measure.

Dr. Crago offered the society his best wishes for its future success.

On the motion of Dr. Burne (vice president), seconded by Mr. E. K. Satchell, a hearty vote of thanks was accorded to Professor Anderson Stuart, Dr. Graham, Dr. Crago, and the other speakers.

The meeting then closed.

OBITUARY.

Dr. E. G. Hazelton.

Death came to Dr. E. G. Hazelton, of 417 Chicago St., October 22, at 2 o'clock, after a lingering illness of six weeks, and he no longer had the strength to bar the door to the "Grim Destroyer."

Dr. Hazelton was taken sick some six weeks ago with typhoid fever, and while the fever had been broken, it left him in such a weak state that he could not rally, and despite the almost superhuman efforts of his medical advisers, death claimed his own.

The deceased was born in Fowler, N. Y., in 1844, and at the time of his death was fifty-five years old. He moved to Kenosha thirty-two years ago, and has ever since been identified with the first social and business interests of the town.

Dr. Hazelton was a member in Masonic circles, belonging to the Chapter of this city and a Knight Templar of Racine Commandery No. 7. He was the organizer of the first water system in use in Kenosha, being the principal stockholder and manager of the company for many years.

No greater tribute to the worth of the deceased can be made than that conveyed in the universal expressions of regrets to be heard on our public streets yesterday and to-day.

A truer man, a kindlier nature, a warmer heart is seldom known, and the community mourns with the family at his loss. While the doctor's death was not unexpected, hope of his recovery was still entertained almost to the end. While the blow is cruelly hard to the afflicted widow and daughter, yet both they and his host of intimates have much to be grateful for, since the end came so quietly and peacefully. He but "wrapped the drapery of his couch about him and laid down to pleasant dreams."

The deceased had seen much of the growth and prosperity of our city, and for years was a moving, active spirit in all that pertained to the general welfare of Kenosha. For five years past he had borne much of the brunt of the failure of the Dan Head & Co. bank, and to this and the worry attendant thereto is ascribed the breaking down of a once vigorous system. Through it all he labored zealously to save depositors and if possible retain their confidence. The work was great and it told on him, and when disease took hold of him it found his system weak from the toil he had given to the work, that he undertook for the good of his fellow man and his good name.

The funeral services will be conducted by Rev. Harry Thompson, Rector of St. Matthews' Church, and will be held at the residence, 417 Chicago street, Wednesday afternoon at 3 o'clock.

Dr. O. G. Bennett.

[Tribute to Dr. O. G. Bennett by the members of the Janesville Dental Society.]

At the call of an All Wise and Over-ruling Providence, Dr. Orrin G. Bennett, of Janesville, Wis., on the 28th day of July, 1899, at the early age of thirty-six years, passed from this to a higher and better life.

Dr. Bennett was a most respected citizen, and as a professional man he commanded the respect and confidence of his fellow practitioners and the public, and was considered an able and conscientious gentleman in the practice of his profession. But above and beyond all else he was a man of true moral worth, and his one great aim in life was to live up to the high ideal he had established as to what a man, as a husband and father, should be. Of a sanguine temperament and sunny disposition he was in manner, affable; in bearing, dignified, and in spirit gentle and sympathetic. The loss of such an one from our midst is always an occasion of sadness and sorrow. But though his sojourn among us was of brief duration we have the consoling knowledge that his life was successful in uplifting and making better by his cheery words and good will toward all, every one with whom he came in contact.

Resolved, That we will ever cherish the memory of our departed brother, and seek to establish and perpetuate the high examples that were so fully illustrated in his short but noble life.

Resolved, That this statement and resolution be placed upon the memorial page of the proceedings of this society; that a copy be transmitted to the family of the deceased, and that it be sent to the various dental journals for publication. (Signed) Janesville Dental Society,

H. R. Powell, *Pres.* H. A. Holsapple, *Sec'y.*

Janesville, Wis., July 29, 1899.

THE

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ORIGINAL COMMUNICATIONS.

SOME CEMENT EXPERIMENTS.*

BY W. V-B. AMES, D. D. S., CHICAGO, ILL.

In a paper on "Cements" read before the National Dental Association Dr. Wedelstaedt says: "There are three evils which we are compelled to deal with at the present time in regard to cements, viz., porosity, shrinkage and expansion." I would add a fourth, the tendency toward crystallization of the liquids of the better class of cements, those in which the acid has not been modified by sodium phosphate only. I wish to specially call attention to the danger of inferior results in using the liquid portion only from any bottle in which crystals have formed, for these crystals represent an essential ingredient of the formula, so in using the liquid portion only, the virtue of the formula is to some extent lost. If the crystals are afloat, or if they have settled loosely to the bottom of the bottle, and can be shaken up, the cement will probably work properly, if the crystals are thoroughly distributed at each using and thus used evenly from first to last, for such crystals will usually liquefy in the mix. If, however, the crystals will not distribute, and are of a bulky, more or less glassy nature, they should, if possible, be liquefied by warming. If this cannot be accomplished the material should be considered useless.

The porosity of the large majority of cements depends on their composition. Of all the large number of makes of cement, there is probably not a dozen, in all, which depart from the stereotype glacial phosphoric acid type of liquid. Metaphosphoric acid of commerce is glacial because of sodium phosphate present for the purpose of giving it that convenient consistency, and in the use of a solution of this for dental cement, along with zinc oxide,

*Read before the Northern Illinois Dental Society.

the basic phosphate formed, which accounts for the setting quality, is a friable porous material, therefore the cement mass is porous.

If phosphates of some of the nonalkaline metals are used to modify orthophosphoric acid for this same purpose, the basic phosphate formed is of a glassy nature, is not of itself porous, and in agglomerating zinc oxide granules, will give a mass comparatively impervious to moisture.

This leads up to the question of shrinkage and expansion. In porous cements we have neither shrinkage nor expansion at the periphery, because there is shrinkage toward an infinite number of centers throughout the mass, and no perceptible change at the margin. In nonporous cements the basic phosphate formed is of a glassy nature and agglutinates the zinc oxide granules to such an extent that the shrinkage will be toward one center, and if the composition is favorable to a diminution of volume, there will be a shrinkage apparent at the margin. Nearly all of this class of cements, however, allowed to harden under moisture, analogous to use in the mouth, will expand somewhat. I have found only one showing shrinkage in the moist state.

This cement talk is practically a repetition of portions of a paper read before the National Association, and would not have been offered but for the purpose of leading up to some tests for shrinkage and expansion which were not given in that paper. I ventured that there was not a dozen cements of the nonalkaline variety, and some of those are little known.

I give the tests of those only prominently before us, as follows, the fillings being made in the steel tubes such as are used by Dr. Black and others in amalgam tests:

Justi's Insoluble	expands	according to mix	.....0004-.0006	inch.
Ames' Metalloid	"	"	" 0002-.0009	"
Harvard	"	"	" 0021-.0038	"
Lynton (measurement difficult)	expands	not less than	.0050	"
C. A. S. (Ash & Sons)	contracts	according to mix	..0003-.0007	"

These cements are not all equally impervious to moisture, but do all contain phosphates of some metals other than of the alkaline group, and constitute the larger part of a distinct class, better as regards porosity than the legion in which the liquid is practically an acid solution of some alkaline phosphate. Whether the fifty points expansion of the Lynton or even the thirty-eight points of the Harvard is advantageous or not, I can only venture

an opinion. From twelve years' use of the Justi, previous to about eight years ago, I found that regulating bands, crowns with little retentive form, and inlays were held by that cement in a manner not to be expected of the ordinary material, and I realize now that that four to six points expansion was the secret of it. This experience leads me to be skeptical as to a cement which in the same mass gives thirty or fifty points expansion.

As to the shrinkage of the one specimen I can only say, that I would not expect very positive retention of regulating bands and inlays having little retentive form. In cavity filling, with such a cement, I firmly believe, from simple reasoning, and also from observation under the microscope of fillings in moist teeth, kept moist at all times, that the adhesion to the cavity wall will cause a shrinkage to the periphery, so that there will be perfectly sealed margins. In the steel tube tests the microscope shows a crevice, because there is not sufficient adhesion to overcome the tendency to shrink toward the center.

The porosity tests can easily be made by any of you. The shrinkage and expansion tests call for apparatus not easily available to all. I am under obligations to Dr. Black for the use of apparatus, without which I would be without most of the little definite information I may possess as regards oxyphosphates.

The Preliminary Treatment and Filling of Root Canals.*

By J. M. Walls, D. D. S., St. Paul, Minn.

In taking up the subject that was suggested to me by your committee, I shall not confine myself to the filling of roots of teeth, but will enter limitedly into the care of roots preliminary to filling. The subject is one that permits of little experimental latitude, and although nothing new may be presented, I hope it will lead to a discussion among the members of this society that will bring us to some consensus of opinion and a consequent more uniform method of work.

When a tooth presents itself to us for the artificial closing of the root canals the etiology of the case is first to be considered, and upon this rests the foundation for preliminary treatment. It may be the pulp has been exposed without chronic irritation. The

*Read before the Minnesota State Dental Society.

capping of the dentinal organ will not be considered, but I want to make a few remarks upon an allied and quite recent method of procedure. I refer to the mummification, or embalming process, which is not resorted to in cases of immediate exposure alone, but followed as a method of treatment in cases of the most extended inflammation.

I will not deny that good temporary results may be and are attained, but I most ardently oppose the use of an embalming medicament for the purpose of leaving the pulp a permanent and desirable filling for its own cavity. Grant, if you please, that the structural tissue remains nullified and nonperishable throughout all time. I doubt not, however, that I would find as few present willing to believe this as they would to believe that rigor mortis of the body would not set in though it had been as thoroughly embalmed as the pulp is. The exudation of serumal fluid, for that is what would take place if the mummification occurs, which is vouched for by the most ardent advocates of this method of procedure, would, although antiseptic at first, be changed through osmosis until the space it occupied would become a cell of infection. But this law of equalization through osmosis would affect the entire pulp as readily as the intraorganic fluid.

Now, another theory, than which there is none more preposterous, is that set forth by our allies across the water; the advancement of a claim that a certain cement they produce, when placed in a cavity in an exposed and irritated pulp, will not only stimulate that organ to renewed life and vigor, but the cement itself virtually changes into dentinal substances.

The audacity and presumption of the authors of this publication seem too great to be tolerated by men so worthy in the dental profession as the societies of this country present.

Let us now take into consideration a tooth in which the root canals to be filled artificially contain infective matter. Too great care in removing the contents cannot be exercised. It is my practice usually to carefully cleanse the outer portion of the canals and seal in them for a few days an antiseptic, usually selecting beechwood creosote or oil of eucalyptol (Saunders' or Merck's), the commercial products being inefficient. These on account of their penetrating and nonirritant action.

To Dr. Black we owe the knowledge that it takes but twenty-four hours after applying eucalyptol to the canals before evidence

of its presence in the peridental membrane is found. I believe creosote to be more potent in cases of long standing infection, but its odor is unpleasant.

At the next treatment all remaining portions of the pulp can probably be removed and the canal washed clean without much danger of disturbance and a soothing antiseptic, such as oil of cloves sealed in the canals, and at the expiration of a few days or a week the root will in all probability be ready to fill.

Each case differs so much in individuality that no set rules for treatment can be laid down. But we have at our disposal a great many remedies to meet the different emergencies, and their careful selection will greatly enhance good results.

Know why each medicament is used and if possible its specific action on the tissues.

When extracemental irritation exists, as it does in so many cases, they should be cared for more as an external wound would be cared for than we are wont to do.

The surface of separation at the foramen of the canal heals either by immediate cicatrization or by granulative effort. If assured of the former no better method of procedure could be adopted than that of immediately filling the root.

If the latter condition exists healing should be allowed before crowding a filling material down upon an already inflamed surface.

At times a continuously irritable root presents itself.

Overtreatment is a common error in these cases, and a wisp of cotton saturated with carbolic acid, creosote, iodoform, or other powder forced against the irritated part will only cause renewed irritation. Make a soothing application and allow the parts to rest and cicatrize.

A healing part if favorably progressing should be let alone. The essayist has seen an extensive granulating surface under treatment of a surgeon daily irritated by spraying with pyrozone, thus breaking down the matrices of the new forming cells.

Just here I want to call your attention to a substance article that appeared in the January *Cosmos*, and written by Dr. A. H. Peck, of Chicago, on "The Essential Oils and Some Other Agents. Their Antiseptic Value, also Their Irritating or Nonirritating Properties." Those who have not read it should permit themselves no pastime without doing so. His experiments show very plainly the marked irritability and poisonous action of a late and much used medicine, formaline.

Having placed the roots in a healthy condition, the next step is to fill, and fill thoroughly, the canals. Their enlargement is usually necessary to accomplish this and is a means also of assuring absolute cleanliness. For this purpose when the canals are small, sulphuric acid fifty per cent followed by a neutralizing agent and alcohol for drying out is most useful and I believe without an alternative it is a necessity. After drying, the canals may be reamed out with Gates-Glidden drills. Some urge their use from the first, but the occasional blocking of a canal has where much moisture existed made me cautious of their use. Also in small and tortuous canals their liability of breaking off. I hear men say they ream canals out clear to the end with these drills. I cannot emphasize my statement of its impossibility in the majority of roots more emphatically than by calling your attention to some of the specimens I have here for examination. These were not selected, but picked up at random. You readily see how in most canals it would be impossible to carry the drill to the end and in about half the cases it would not pass two-thirds the length of the root, but it is a readily conceived advantage to open well the canals as far as we can; reaming and frequently cleansing with a hooked or barbed broach and air blast. I get very pleasing results by dragging the canals with the Donaldson barbed broaches, using a fine one to start with. This is more satisfactory after the use of sulphuric acid, but care should be taken not to contaminate the broach with the acid.

I frequently use alcohol before the soda solution, pumping it to the end of the canal. This prevents the effervescence from clogging fine canals. It has been demonstrated, unfortunately for us, that very frequently there are quite a number of foraminæ in a root, some of which open quite a distance from the apex.

If those interested in the subject will prepare and fill a few roots of extracted teeth (that have been invested in plaster) with chloro-percha and gutta-percha points, they may be somewhat surprised on removing the tooth from the plaster to find a great many openings onto the peridental membrane.

These cases show the necessity of filling with a substance that will spread and can be forced in all directions. I have prepared and filled and had others more skillful than myself prepare and fill roots with different substances used for that purpose; a few of these I have mounted on a card for the examination of those who

care to see them. The roots were wrapped in moist cotton and imbedded in plaster, the canals cleansed, dried and filled.

Dr. Pruyn, of Chicago, has recently adopted the method of filling canals with sandarac varnish and gutta-percha points, his theory being that the varnish would follow the remaining alcohol which was used for drying out.

The results in these cases seem very good, the varnish appearing to enter all the openings of the canaliculæ. Cement is favorable on account of its adhesiveness, but you are not positive of getting it to the end, if any moisture remains in the canals; and besides being impossible to remove, if necessity demands, it is an irritant to the soft tissues when it passes through the foramina. The points above mentioned are contradictory to the use of substances which do not hermetically seal all openings into the root, as is the case with the cotton either dry or dipped in solution.

Dr. N. H. Myers, of Philadelphia, after years of experience in filling root canals with antisepticized cotton, acknowledges many disasters and finally resorted to the use of wax, pressed home by a wisp of cotton and left in the canal. Wax has proved a poor agent in the hands of those whose fillings I have seen, including my own (made for experiment). I hope those who use it for a root filling in practice are more skillful in manipulating it than these were. Cotton, even when dipped in chloro-percha has not borne a favorable reputation. The chloro-percha seems to be pressed out before the cotton reaches the end of the canal.

Chloro-percha and gutta-percha points are so much used and the results so well known I shall not take your time in speaking of them. In the smaller canals gold wire is a great assistance.

For the introduction of this method we are indebted to Dr. W. N. Morrison, of St. Louis. As long as thirty years ago he used this method and continued to do so until his death in 1897. Dr. Morrison alleged that if gold wires were used in the fine and tortuous canals so often found in the buccal roots of the upper molars, even if the nerves had not been entirely removed, it was very seldom that any inflammation followed.

It is possible, however, that these very small canals if left alone would not give any trouble.

I believe, though, that in the preparation of canals for a filling the removal of all perishable material is a most potent factor in the success of the operation. After this is accomplished it makes

little difference what the root is filled with so long as it is not irritating and seals the canal thoroughly.

Before dismissing my subject your attention is called to a pleasing and common but not persistent practice of covering the root fillings with a layer of cement. Frequently upon opening into the roots of teeth previously filled with amalgam we find that this substance has been packed some distance into the canals; and occasionally on boring through a filling we find a great mass of gutta-percha and then note the reason of the amalgam bulging beyond the edges of the cavity. There is another point that seems to me of value in root fillings, that is the use of pink or pure gutta-percha.

The color is a marked assistance in case the filling is to be removed for any reason. It seems to me that as a State society we might to mutual advantage adopt a few specific methods of procedure and enhance a better feeling among the members of the profession.

A Method of Placing Ourselves Properly Before the Public, and Elevating Ourselves Before the Same.*

By J. W. Penberthy, D. D. S., Minneapolis, Minn.

In presenting this paper to you it is with the hope that it may provoke discussion, and in the near future cause us to think more seriously of the position which we *do* and *do not* hold before the public.

We have trodden a very straight and narrow path *too* long, and to my mind the time approaches when we, as dentists, should occupy a wider field than we have thus far.

We confine ourselves within too narrow limits, and must enlarge our territory and take in the field that is properly ours by right; and a little energy on our part will soon place us in possession of the field so truly ours.

It has been the writer's opinion for years that the D. D. S. and D. M. D. should be recognized as the proper person to treat all diseases of the oral cavity, beginning with early dentition, and I feel the only reason why we are not lies at our own door and that of the colleges from which we have graduated.

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*Read before the Minnesota State Dental Society.

It is true, we are taught therapeutics and materia medica, however, in a very superficial manner, and under the circumstances I do not know as we are so much to blame for not filling the field better and more understandingly. If our teachers would impress upon us these branches as well as they do the preparation of cavities and other mechanical work, we would occupy altogether a different position before the public and a much more satisfactory one to ourselves. I would venture to say, not one dentist in an hundred has ever written a dozen prescriptions. If a case comes to him which he recognizes as requiring systemic treatment, he at once advises the services of a physician. This should never be; *treat it yourself.*

I have consulted different works sold to us which we are advised to study so as to enable us to follow intelligently and treat the diseases so often presented to us, and will say, so far I have failed to find any intelligent instructions on the treatment of the diseases I am going to mention outside of a mechanical nature.

When the chairman asked me to write a paper I asked him to name the subject, and, as he told me to write on any subject except the lymphatic system, I thought I would give him something that would be fully as interesting to him, and possibly to the rest of you.

I cannot go as far as I would like in the subject I have outlined, but will go as far as possible and treat it as fully as I can in the time given me.

The first work I will take up is "Oral Pathology and Practice," by Barrett, and the first disease that we all shrink from attempting to treat is pyorrhea alveolaris. Let us see what he says about it, and how much we get in the way of systemic treatment.

"True pyorrhea alveolaris should be a manifestation of some distinct, perhaps pacific, pathological condition, and we must recognize at least three separate pathological degenerations that are covered by the term, and which, without doubt, are often confounded with each other.

"First of these will be entirely local in its character. It will have its origin in an easily comprehensible cause—local irritation.

"Second, will have its etiology in deposits of a hard, nodular character upon the roots of the teeth.

"It will be distinguished by the formation of distinct pockets within the alveolus.

"The third will give evidence of some distinct cachectic condition or dyscrasia. It will present phenomena that are peculiar to itself, and will be without either of the two previously named factors."

Now we will see what it said in regard to treating the system. "First, purely mechanical means followed by antiseptic wash. Listerine is good, or any of the pleasant essential oils, largely diluted.

"Second, condition, mechanical; trichloracetic acid to soften the deposits, and Dr. Younger, who has made a specialty of the disease, recommends lactic acid, and claims that it is of special therapeutic value in this disease."

Prognosis of third condition is almost invariably bad. It seems to be connected with some vicious constitutional condition that prevents eradication of the disease. The author has under his care instances in which it manifested itself twenty-five years ago, and, though it has been kept in check, sometimes by most radical measures, it still crops out occasionally, and he and his patient have never been long entirely separated. Treatment of this special condition must to a considerable degree, be general in its nature. And he also says: "*When tonics are required they should be administered. If there is any distinct diathesis with which it may be connected, it should be attended to.*" Antiseptics must be constantly used, and the mouth kept as free from putrefaction as possible."

Stimulating, astringent mouth washes should be frequently employed, and every hygienic precaution exhausted. The space between the teeth and gums should be kept clean, and whenever necessary, it should be wiped out with mild cauterant like lactic or trichloracetic acid. Massage should frequently be employed by rubbing the gum with ball of finger, using considerable force. The toothbrush should not be too harsh, and washes rather than powders should be employed. In some instances the author has seen what he thought to be good results following of anti-gout and rheumatic remedies. The employment of lithia in some form, or salicylic acid, has been especially recommended. Dr. E. C. Kirk has reported excellent results from a persistent use of lithium bitartrate in the form of tablets."

So much for Barrett. How much have we gained in the treat-

ment of pyorrhea alveolaris, through the medium of the system? To me very little and that in a way that would make you feel that the author himself was a little in doubt about what to use.

Now we will take up Harris Principles and Practice, 13th edition, 1897, and see what it has to say.

"It denotes suppurative inflammation of the gums and peridental membrane, attended with the destruction of the alveolar process, etc., etc."

Dr. Black maintains that the disease is of local origin, Dr. Atkinson as constitutional cause.

Dr. Pierce that it is due to a gouty diathesis of the system and defines two forms of this affection, in one the origin of the calcic salt in the saliva, and in the blood. The former he designates as ptyalogenic calcic, its origin being local and salivary, the latter hematogenic calcic, its origin being constitutional, and associated with some modification of the normal composites of the blood plasma.

The calcic pericementitis may have its origin at the gingival border, the salivary calculus acting as a local and mechanical irritant with such concomitants as irritation, inflammation, suppuration, absorption of gums and alveolar process. He says we have three distinct abnormal conditions affecting the gums, peridental membrane, and alveolar process.

"First. Gum inflammation and destruction, caused by a mechanical irritant.

"Second. Inflammation of the gingival borders without the presence of salivary calculus.

"Third. Is pericemental irritation commencing at or near the apical extremity of the root, due to the presence of some morbid composite of the blood exuded with the plasma and infiltrating the peridental membrane and frequently deposited upon the root near the apex." "This latter I designated true pyorrhea alveolaris, or hematogenic pericementitis, and so intimately is it associated with some other local manifestation of a gouty diathesis, that I believe it to be another local expression of that systemic condition, etc., etc." While Drs. Bodecker, Darby, James Truman, Rhein and others dissent from Dr. Pierce's views as regard uric acid, they believe it to be a more or less general chronic ailment.

Now we will look at the treatment and without tiring you out

by rewriting all they say, give you in an abbreviated form what is given us to follow in the way of systemic treatment. He says: "To start out with, in the more advanced stage of the disease the treatment consists in reaching by means of narrow, sharp instruments, the extreme limit of the diseased action, removing all deposits and breaking up the diseased tissue and necrosed bone, and polishing the surfaces roughened by deposition of calculus, etc., etc. *After this operation is completed an application of dilute aromatic sulphuric acid will prove serviceable and in many cases the only after therapeutic treatment necessary will be the use of an astringent wash, such as tincture of myrrh in its full strength* applied to the gums at the neck of the teeth."

When constitutional disturbances exist in connection with the local effect, after perfectly removing all irritants a dilute solution of chloride of zinc may be applied to the ulcerating surfaces by passing it under the gum about the necks and roots of the teeth by means of cotton wound on a broach and alternating it with dilute aromatic sulphuric acid and tincture of iodine applied to surface of the gums.

"Chlorate of potash solution should be used as a mouth wash after each meal and at night with as thorough use of the brush as the conditions of the gums will permit." The use of a solution of common salt is recommended during the intervals between the applications of the more powerful remedies.

This is all I can find to assist us in the treatment of this disease through the system in any works I can find that are recommended us to study. To say the least, it is very little and ought truthfully to say nothing. I have had some experience in the treatment of this disease through the system, but have gone outside the works laid down for us to follow. As the time has already been more than taken up by me, I will cite one case and pass on to one or two other remedies.

A teacher in one of our public schools came to me with a very bad condition of pyorrhea which had been three years' standing. I did not promise to make a cure, but said I would try to help her and at least improve the conditions. After the usual mechanical treatment I put her on mercurius vivus. I treated her gums by injection into the pockets of an antiseptic three times a week for two weeks and at the end of four weeks the gums presented a good, healthy condition. She, of course, made daily use of an antiseptic mouth wash.

I will now take up the use of creosote as a systemic remedy in the practice of dentistry. There are many indications for the remedy that, for lack of time, I cannot take up, but will mention a few, and you can look it up for yourselves for the balance. For instance, toothache, extending to temples and to left side of face, drawing, extending to inner ear and temple. Gums bluish red, soft, spongy, easily bleeding, inflamed, ulcerated and scorbutic. The remedy has also been proven as a preventive to caries.

Hydrofluoric acid. This remedy I have used only in one condition and that in case of slow eruption of wisdom teeth and will cite one case. A Mr. M. came to me after suffering for a week, with mouth in terrible condition. He had been under treatment for that time at another office. The treatment consisted of daily use of the knife and free application of iodine. I discontinued both and put him on hydrofluoric acid and in three days his mouth was comfortable. It also has the following provings: Rapid caries of the teeth, great sensitiveness of the teeth, cannot be prepared for filling, and in cases of fistula. Another, staphisagria (native of the south of Europe), toothache in decayed teeth during menses, aggravated by cold drinks, and touch, not from biting on teeth; aggravated by drawing in cold air, and after eating, etc.

There are other remedies I would like to mention, and would like to have covered the ground of these more fully; perhaps some future time I will.

You will probably have concluded in your own minds from what school I have taken the remedies before this. I am very fortunate in being associated with physicians—Drs. Leonard and Austin—who have a very large homeopathic library, and it is from this I gained the information I have given you above.

Hoping you may have gained some new thoughts in the line I feel we should more fully understand and practice, and if so, I will feel amply paid for the time I have put on this paper. The only desire I have is that, though imperfectly given, the thought presented may cause you to study on these lines and gradually, at least, gain the position you are certainly entitled to.

Lecture on Crown Work.*

By Dr. F. H. Orton, St. Paul, Minn.

As most of the failures in crown work can be traced to the imperfect preparation of the root, we will begin with supposing we have made our diagnosis and decided to crown the tooth; but first a few remarks leading up to that stage of the operation. It hardly seems possible that it should be necessary to call attention to the fact that it is just as necessary to restore the interproximate space in putting on a crown as in a compound filling. In a large number of the teeth that we decide to crown (speaking especially of bicuspids and molars) the teeth are so badly broken down, or have been filled so often, that there is nothing left on which to build a filling. As a consequence the teeth have dropped together and the interproximate space has been narrowed or lost. Even if this has not happened, you *will* narrow the interproximate space when you fit a band without first gaining space by separating the teeth, both mesially and distally. It is a comparatively easy matter to properly trim the enamel from the buccal and lingual margins of the root without lacerating the gum, but it is almost impossible to do so on the mesial and distal margins without first gaining space. At the risk of some one saying "rodents" I am going to quote Dr. Black on something you all know:

"It is of the utmost importance that the full width of the interproximate space be preserved in order that the gum septum shall have sufficient room for the maintenance of its tissues for the continued health of the teeth and their membranes." So having gotten a sufficient space with a wooden wedge, gutta-percha or what not, our *next* step will be to prepare the root (speaking now of porcelain crowns). The root should be ground flat and even with the gum margin. We want a *flat* base for our crown to rest upon, for the same reason that you make a flat seat in your *cavity* preparation. I cannot see that there is anything to be gained by leaving an elbow or not grinding down the lingual portion of the root, for the more body you have the stronger will be the crown. There is no porcelain veneer or thin attenuated edges of porcelain that will stand the stress of mastication, therefore, porcelain crowns, especially bicuspids and molars, are not indicated where

*The cuts referred to in this paper were used in the September, 1898, Review. H. L. Cruttenden.

there is a short bite; then root canals should be enlarged. Use as large a post as possible without weakening the root. The length of the post should be at least a trifle longer than the crown. Now we come to the trimming of the root, which should be beveled under the free margin of the gum but not far enough to infringe on the peridental membrane (pass around sample). Method of beveling root instrumentation is largely a matter of individual preference. I use, to bevel the root on the buccal and labial surfaces a flat faced or a diamond shaped chisel. On the lingual surface, a concave Arkansas wheel, which can be turned on a lathe to the exact size to fit each particular root (pass around). You will soon have an assortment of sizes for every case. It requires more skill than I possess to bevel the distal and mesial surfaces of the root without lacerating the gum septum *more* or *less*. If you have lacerated the gum septum you have a cicatrix formed. There is more or less shrinkage, and we have of course an imperfect reproductive tissue. It will not return to its original normal condition, though it will bear a certain amount of laceration, if the *space* is properly preserved and the band is so carefully *fitted* as not to continue to be a constant irritation. There are several reasons for beveling the root. First, this kind of a band does not increase the thickness of the root at the gum margin and does not narrow the interproximate space; second, it makes it possible to get a more perfectly fitting band; thirdly, it allows you to get a sufficient amount of porcelain, so that the crown will not be weak at this point. You will have more than a simple veneer of porcelain, which would be the case if you used a straight band.

As Dr. C. N. Johnson says it is necessary to repeat any teaching or theory a number of times in order to secure its adoption by the profession, I wish to call attention to a point brought out by Dr. Nyman, of Chicago, "The Necessity for Gingival Contour." He believes that many instances of inflammation and congested conditions of the gum margin around crowns are due to the fact that the crown has not been contoured so as to resemble the natural tooth crown at this point. I can explain this better by means of these charts. A cross section of a tooth cut off at gum margin will be represented by Fig. 1, the shaded portion representing the enamel. After the crown has been constructed and attached to the root, a cross section at the gum margin will appear as in Fig. 2. It will readily be seen that at the gum margin a

space has been left (represented by the dotted lines) that was formerly filled by enamel. As a result the gum does not hug the crown as closely as did the natural tooth, and débris and food will gradually work in under and cause trouble. The crown should be contoured by fusing body over the band so that a cross section of the gum margin will appear as in Fig. 3.

Another cause of failure in crown work is the want of judgment in using too wide a band. The excuse given for using a wide band is to prevent the root from splitting. I think this danger is overestimated. If the articulation had been properly devised and the posts properly fitted there is little danger of splitting the root, while the percentage of crown teeth that will feel comfortable after the peridental membrane has been injured are so few as to make this method of driving bands two or three mm. beyond the gum margin impracticable. I try to make my bands come just to the peridental membrane, and in cases where I have been successful in doing this I have never seen a recession of the gum. A majority of the dentists with whom I have talked, while they acknowledge the artistic possibilities of the porcelain crown, seem to think that it will not stand the stress of mastication. Now I will quote some experiments given by Dr. Nyman in the DENTAL REVIEW for September, 1898.

The experiments were made with crowns composed of Justi facings, Close's body, bicuspid measuring from top to bottom 7 mm., mesio-distally 4 mm., buccal-lingually 6 mm., cracked at 1,740 pounds.

A molar measuring from top to bottom 7 mm., mesio-distally 8 mm., buccal-lingually 6 mm., cracked at 2,230 pounds.

As the average crushing force of the human jaw is about 175 pounds, this seems to demonstrate that the average porcelain crown has sufficient strength to withstand any pressure that may be brought to bear upon them in mastication.

I may be an enthusiast, but it seems to me the highest art in prosthetic dentistry can be reached with this material. Cusps may be built up and depressions formed to perfectly accommodate the most difficult articulation. It gives us an opportunity to display all our artistic ability in carving, tinting and in such perfect restoration of lost parts as to conceal art itself.

Ocular Disturbances as the Result of Diseases of the Teeth.*

By L. L. Davis, D. S. S., Chicago, Ill.

The selection of the above topic for discnssion by this society was prompted by the startling assertion of a well-known oculist in this city that "the dental profession needed education in this direction." Knowing this society to be a representative one of the dental profession, I am glad to be able to bring before it a subject which while not entirely new, yet is one of interest, and requiring investigation. In this day of specialties, the great aim of the practitioner in any particular branch of medicine is thorough investigation of all causes likely to affect the organ he treats, and therefore if it is possible to elucidate any important data upon the subject of this paper, by creating an interest in, and bringing about careful observations along this line, by the dental profession the writer will feel that he has accomplished his purpose.

In order to more clearly outline the connection between the teeth and the eyes, it is necessary to briefly run over the anatomy of the parts, and in doing this we find that the fifth or trifacial nerve supplies sensation to both teeth and eye through its three great divisions. The first, the ophthalmic, sensory in function and supplying eyeball and lachrymal gland, mucous membrane of nose and eyelids. Second, superior maxillary nerve, the orbital or temporo-malar branch starting at a point directly above the posterior dental branch. The temporal connects with the lachrymal branch of the first division of the fifth and then passes on and through the temporal canal to the integument. The superior maxillary also supplies the side of the nose and the upper lip, the lining membrane of nose, antrum of Highmore and posterior ethmoidal cells, all these parts being in close relation with the sympathetic ganglion.

From the third division of the fifth or inferior maxillary nerve small twigs are given off which connect with branches of the second division; thus we have a union of all parts of the three great divisions through its terminal filaments as well as by their common origin, the Gasserian ganglion. It is therefore reasonable to presume that any continued excitability of one part may result in sympathetic disturbance of the other parts, but as diseases of the eye demand immediate attention, reflexes to the teeth are not of so

*Read before the Odontological Society of Chicago, October, 1899.

common origin from this source as from the nose and teeth to the eye. Ocular disturbances often arise from nasal trouble, and the ophthalmologist who omits a careful inspection of this organ may fail to give his patient the desired relief.

Kirke's "Handbook of Physiology" says in relation to muscular movements, "the branches of the ganglionic portion of the fifth exercise great influeuce on movement of parts to which it is distributive. It is probably, for conferring this sensibility on the muscles that the branches of the fifth nerve communicate so frequently with those of the facial and hypoglossal and the nerves and muscles of the eye. These have an intimate connection with muscular movements through the many reflex acts of muscles of which it is the necessary excitant, hence, when divided and can no longer convey impressions to the nervous centers to be thence reflected, the irritation of the conjunctiva produces no closure of the eye.

"When the trunk of the ophthalmic portion is divided, the pupil becomes; according to Valentin, contracted in men and rabbits, and dilated in cats and dogs; but in all cases becomes immovable even under all the varieties of the stimulus of light. How the fifth nerve thus affect the iris is unexplained; the same effects are produced by destruction of the superior cervical ganglion of the sympathetic, so that, possibly, they are due to the injury of those filaments of the sympathetic, which, after joining the trunk of the fifth, at and beyond the Gasserian ganglion, proceed with the branches of its ophthalmic division to the iris; or, as has been ingeniously suggested, the influence of the fifth nerve on the movements of the iris may be ascribed to the affection of vision in consequence of the disturbed circulation or nutrition in the retina, when the normal influence of the fifth nerve and ciliary ganglion is disturbed. In such disturbance, increased circulation making the retina more irritable might induce extreme contraction of the iris; or under moderate stimulus of light, producing partial blindness, might iuduce dilatation, but it does not appear why, if this be the true explanation, the iris should in either case be immovable and unaffected by the various degrees of light."

The literature on this subject is very meager, only slight reference being made to reflex lesions, etc., and in some works absolutely no mention whatever. A careful review of the work of St. John Roosa, on diseases of the eye, fails to discover a single reference to the subject.

Swanzy, on diseases of the eye, mentions the teeth in a paragraph on the subject of orbital cellulitis or inflammation of the connective tissue of the orbit, diseased teeth being mentioned as one of the causes.

De Schweinitz, a recent work on diseases of the eye has no reference to the teeth. He, however, remarks that periostitis as the result of syphilis, is an important factor in diseases of the eye.

Noyes' book on diseases of the eye mentions teeth only as indicative of syphilis by their formation, but nothing is said of effect on the eye.

Gould's "American Yearbook of Medicine and Surgery for 1899" shows no record on this subject.

Reference to the "Index Medicus" for several years past fail to show that any article has been written on this subject.

Knies' work on the eye in general diseases is productive of the greatest amount of information; one whole page being devoted to records of cases where the teeth had shown marked evidence of effect on the optic. All of these cases are recorded by foreign writers, and some of them are so remarkable as to require an interrogation point after them. He says, "Nearly everything that happens between the ages of one and seven years is attributed —and not by the laity alone—to teething."

"Conjunctivitis and phlyctenulæ are said to result from teething, but the former are so frequent that this relationship is very uncertain. During the teething period disturbances of function can only be recognized when they are very marked, and for this reason are undoubtedly overlooked in the majority of cases.

Among the many forms of ocular affections ascribed to toothache in adults are keratitis, iritis, phlyctenulæ, glaucoma, intraocular tumor, paralysis, asthenopia, supraorbital neuralgia and exophthalmus; restriction of accommodation is mentioned with special frequency. Schmidt found it seventy-three times in ninety-two cases, either bilateral or unilateral (in the latter event, only on the side of the toothache); it was most frequent in youth. He believed it due to reflex increase of pressure in the eye, but Knies argues that limitation of accommodation during toothache results from lack of vigorous innervation on account of distressing pain.

On the other hand, spasm of accommodation has been observed as a nervous symptom in toothache, and disappears immediately after the removal of a painful tooth.

Gosselin makes a similar statement concerning supraorbital neuralgia. Amblyopia and amaurosis as the result of disease of the teeth have been reported in the records of ophthalmology, by Lardier, Gill, Metras, Keyser and Samelsohn.

"The reverse is also true according to cases cited by Dimmer and Sewill, development of cataract having been observed as the result of tooth extraction."

Neuschueler reports the cure of toothache by means of glasses. Knies says "That pain in the upper teeth on the same side is a frequent symptom of the so-called ciliary pains of keratitis, but particularly of iritis. A neuralgic toothache may be the prodromal sign of glaucoma."

Observations by the essayist have not proved of much value, as but two cases have been of a sufficiently marked character to attract attention.

In one case, male, between forty-five and fifty years of age, a considerable interference with the powers of accommodation extending over a period of two years. Under advice of oculist his glasses were changed several times. Several of the teeth in superior maxillary were in a diseased condition, one especially as the result of pyorrhea alveolaris. This tooth, the left central incisor, was retained by ligatures and treated for six months but without beneficial result, so was extracted and a bridge inserted. The eye trouble passed away within two weeks after the extraction, and up to the present has shown no signs of recurrence.

The other case was that of female, about forty-seven years old, who after the insertion of a bridge extending from the first molar to cuspid tooth on left inferior maxillary. Some months after the bridge work was inserted the patient was referred to me for relief from pain, at point of root of cuspid. Finding it necessary to remove bridge and treat root I did so, and the patient then explained that ever since the work had been done she had suffered with her eyes, and that the removal of the bridge had given relief.

With higher education and civilization there seems to come a corresponding weakening of many organs of the body, more especially those of the eye and teeth; and the recent investigations of the sight of children attending the public schools of this city, show the need of such examinations of important departments of the human economy at an early period in life, if the body is to keep pace with the brain in future generations.

Hyperopia, myopia and astigmatism are prevalent to an alarming extent among the children of to-day, if statistics prove anything, and the close relation of the dental organs to the perfect function of nearly all the other organs of the body, suggest that the impairment of the teeth may be a factor in producing some of the ocular disturbances. Certain it is, that an impaired digestive function at a period before the eruption of the teeth will result in defective development of the entire body of the child, and should the child live long enough to complete dentition, one of its first needs is the care of the teeth. Should the teeth be neglected, impaired digestion is one of the first results of such inattention, to say nothing of the more serious troubles liable to arise by the admission of disease germs, tubercular and otherwise, through the defective organs of mastication.

Carrying the argument to its climax, it is reasonable to presume that the suggestion made previously must become an assertion of some force, viz., the impairment of the teeth is a factor in producing ocular disturbance.

Aside from these cases I have nothing more to add at this time except a plea that as the subject needs investigating, some attention may be given it in your daily practice.

President's Address.*

By E. A. Royce, D. D. S., Chicago, Ill.

Gentlemen:—I have so recently read a paper before this society, it is hardly to be expected I will present an elaborate article to-night, but as according to custom the retiring president must say something whether he has anything to say or not, I suppose I must at least suggest a subject for your discussion.

The influence of this society so far as I am able to judge has always been for the advancement of the profession, and with the knowledge I have of the individual members I feel sure that so long as the control stays in the hands of the present members, the Odontological Society of Chicago will be found in its place on the right side of every question in which the future welfare of the profession is concerned.

The subject which I would like to hear discussed to-night is

*Read before the Odontological Society of Chicago.

an old one, but for some time I have thought that the dentists at large should more fully comprehend and accept their professional responsibilities, and to-night I wish to enter my strongest protest against one of the habits which seems to be growing upon a very large number of the members of our chosen calling, and that is the public and indiscriminate cry against the colleges and their methods of instruction. One could hardly pick up a journal of late without reading in it some criticism, or answer to an unfriendly criticism, upon college methods, and this continual agitation of such a subject surely has an influence upon all classes of people to whom it is known.

Might they not with propriety reason that if the schools of dentistry are so poor, and their methods so very irregular as is represented by some of those who talk and write upon the subject, how can it be expected that the dentists graduated from these schools will be anything but the merest tyros and charlatans.

Has it never impressed you that all this unnecessary criticism of our colleges may have quite an influence upon the value of the diplomas of the American schools, not only in America but also abroad. Let us see if an example will not illustrate. We will say you are in a law office, and picking up a law journal read in it that under the present system of education for the bar, it is impossible to produce any high class lawyers, and that the law graduates are educated only for practice in the police courts and nothing more can be expected of them. You naturally ask the attorney about it; and he informs you that it is a fact that the present system of teaching is such that nothing but a shyster lawyer need be expected as a product. A little later you read another criticism of the same kind, and an interview with some other legal light gives you the same impression as the first lawyer.

How many times must that be repeated before the impression is left upon your mind that there must be something radically wrong with the educational facilities in this great land so far as the law is concerned, or the members of the profession would not speak so disparagingly of the methods of their colleges?

Now, gentlemen, it seems to me that this is just the impression that is being given about our dental schools by the dentists who do not appreciate the work of our best colleges and the efforts they are making to advance the standard. Now, does it do any good to criticise the colleges in this unfriendly way?

None of us think they are quite perfect, but they have so changed for the better in the last few years that those of us who are not actively engaged in educational work find it difficult to keep pace with their strides.

A few years ago the term required at school to acquire the degree of D. D. S. was two short courses of four or five months each, and the lectures in the two years were the same. So in reality all that was required was to attend school eight or ten months and listen to one courses of lecture over twice.

How different it is to-day in the best colleges where they require three terms of seven months each and a progressive course of studies, or twenty-one months of progressive work required at present, against four or five months a few years ago; and I understand the course is to be still further extended to four terms by some, if not all of the schools. The methods of instruction have also been so improved that a student who is anxious to learn can accomplish a great deal more in the same length of time now than he could under the old dispensation. Do you for a moment think that these improvements have been brought about by adverse public criticism? Of course there is still a chance for improvement, and I believe that those in charge of the schools, are willing to acknowledge it, and are also ready to consider and adopt any reasonable suggestion for improvement from the profession or the public.

I think you will all agree with me that it is the friends of the schools who have worked such a wonderful change. Not only those directly connected with college work, but those outside the schools who have been able to rise above the personal equation, and give good sound thought and friendly advice to those in charge.

I believe in criticism wherever and whenever it is needed, but to have that criticism of any value, it should be made in a friendly spirit. A letter to some member of the faculty, or to the association of faculties, will accomplish much more good and much less harm than a criticism published broadcast over the world.

The reputation of the representative schools should be most carefully guarded, and will be guarded, by every dentist who has the good of the profession at heart. As a stream cannot rise above the level of its source, so you may be sure the reputation of the profession will not rise higher than the reputation of the sources from which dental knowledge is obtained.

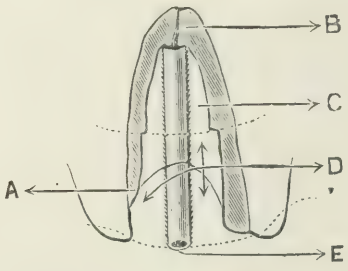
Root Preservation and Obtaining a Bridge Abutment with a Richmond Crown Under Adverse Circumstances.

By A. E. Wrixon, D. D. S., Chicago, Ill.

The following practical case, after three years' test, serves to illustrate the possibilities of root conservation under adverse circumstances:

The patient, a young man about twenty-two years of age, presented himself to me with a badly decayed cuspid, attached to which, by means of a poorly fitting band, was a bridge. Under the band the decay had penetrated up almost one-third the length of the root on the mesio-labial surface.

After treating and filling end of root, take a small piece of German silver, thirty-one (31) gauge, making a small tube of it,



A. Extent of decay. B. Root canal filling. C. Cement. D. Amalgam. E. Tube.

in size two-thirds the length of root and large enough to admit the pin of the crown. Roughen the outer surface of tube with a sharp chisel, take a bud bur the diameter of which is the same as that of the tube, ream out root to admit tube, then groove walls with cross-cut enamel bur and set tube in with cement, the cement extending down only one-third the length of the tube. Have a small piece of wood in the tube to prevent the cement getting into it. Pack the remaining open portion of root with amalgam down to gum margin. After amalgam is hard trim it and the end of tube, then make cap for the crown.

The idea of the tube is to support and hold in the amalgam, which aids in shaping the cervical portion of root for the crown. Had I simply built up the root with amalgam, omitting the tube, and then drilled into the amalgam for the pin of the crown, I would have dislodged the amalgam and not secured a firm foundation.

After three years this patient returned to me. In the meantime he had lost the first bicuspid on the opposite side, which was to be replaced. After removing the bridge, which consisted of the anterior six teeth, I found the tube and the amalgam firmly intact. I added two teeth to the bridge and reset the same, which has now been in five months and is very firm, giving the patient no inconvenience.

Ordinarily the extraction of a root in this condition would be deemed inevitable. This case somewhat demonstrates the possibilities of preserving a badly decayed root and using it to good advantage in crown and bridge work.

Examination of the Teeth of Lepers at the Meguro Leper Hospital, Meguro, Near Tokio, October 14, 1899.

By Louis Ottofy, D. D. S., Yokohama, Japan.

This hospital, or rather home, as it is called, is located in the environs of Meguro, itself a suburb of Tokio, along a beautiful country road, in a lovely spot of scenery. It is supported wholly through charity, and is in charge of Dr. Otsuka and his wife. Until recently, Dr. Kitazato, the famous discoverer of the plague bacillus, also conducted a leper hospital, but this has now been merged into the institution at Meguro. The following is the roster of patients at the present time:

Adult males	20
" females	8
Children, males	4
Total	32

The cases are in all stages of advance, the oldest being of six years' standing. Through the courtesy of Dr. Otsuka, I had an opportunity to examine the teeth of eight of these unfortunates, the remainder being too far advanced to justify the risk of personal contact. In the first place, I was surprised at the generally sound and hard structures of the teeth of these eight men, who ranged in age between twenty-five and forty, notwithstanding the fact that the lack of hygienic care was apparent in every mouth. The small number of teeth lost by extraction was also a noticeable feature. Irregularity of the teeth, which from a mere observation, statistics being wanting, I am of the opinion is characteristic of the Japan-

ese race, was noticeable in six out of the eight cases, and the presence of salivary calculus, which is usual when the teeth are not regular, was, of course, also in greater or lesser quantity present.

The condition of the teeth are as follows:

Case 1.	Teeth sound	21	; carious,	7	; extracted,	1	; not erupted,	3.
" 2	"	"	24	"	8	"	0	"	"	0
" 3	"	"	20	"	12	"	0	"	"	0
" 4	"	"	28	"	4	"	0	"	"	0
" 5	"	"	18	"	9	"	1	"	"	4
" 6	"	"	23	"	9	"	0	"	"	0
" 7	"	"	30	"	2	"	0	"	"	0
" 8	"	"	27	"	4	"	0	"	"	1

SUMMARY.

Total number of teeth which should be present.....			256
Sound teeth		191	
Carious teeth:			
Unfilled cavities.....	53		
Filled cavities.....	2		
Extracted teeth.....	2		
	—	57	
Unerupted teeth.....		8	
		—	256

On examination of the table several facts will be noticed, especially the presence of so large a proportion of the third molars, on an average of only one in each case missing, and as a fact, there being only three out of eight who have not erupted every tooth. I am of the opinion that no other civilized nation would show the same condition, and I am inclined to the belief that prognathism, which I believe also to be characteristic of the race, may have some bearing on this point, but inasmuch as no reliable data as yet exist, no definite statements are possible.

At this point I might mention the fact that I have called the attention of the American Dental Society of Japan to the importance of inaugurating a system of examination of the teeth of school children and of military conscripts, which is now agitating the minds of the profession in Chicago, and in which, in passing, I might add that so long ago as 1883* and 1888† I published statistics of the examination of the teeth of over 600 school children and covering reports on over 14,000 teeth. It might interest some of the prime movers in Chicago to know that some of these exami-

*Trans. Ill. Dent. Soc., 1883. †Trans. Amer. Dent. Assoc., 1888.

nations were made in the public schools of Chicago, without the sanction of the then board of education, but by the kind indulgence of some schoolma'ams, to whom for the time being, and for this purpose I had a passing fancy, chivalrously testified to by theater tickets and caramels.

PROCEEDINGS OF SOCIETIES.

Minnesota State Dental Association.—Sixteenth Annual Meeting.

[Continued from page 947.]

SIMPLE CASES OF PERICEMENTITIS, BY DR. E. K. WEDELSTAEDT, ST. PAUL. SEE PAGE 913.

DISCUSSION.

Dr. A. C. Searl: I have been practicing this treatment two or three years, and with two or three exceptions I have had admirable success. In the opening of the chambers when I find I get a root pulp, instead of using the broach, I use a slip of white paper, then use the broach. After opening the pulp chamber I use a little cotton disk and I get no pressure from the cotton; in that way I save any pressure. In sealing the cavity I use eucalyptol. I want the occlusal cavity sealed perfectly, and with two or three exceptions I have had first rate success with it.

I cannot add anything to the paper, I am sure. I leave it to you for further consideration, for the paper is better than anything I can imagine.

Dr. J. W. Penberthy: In attending our meetings I claim it does not always mean that we will gain by finding out something new, but by having our own methods improved upon is a great satisfaction to us. There is one thing I want to ask Dr. Wedelstaedt, and that is this: I do not do just as he does in regard to not allowing myself to enter the cavity. I take a clean broach, where there is blood or pus in the cavity, and wipe it out, placing the pressure behind and force this blood and pus out. The offensive matter having been crowded out of the cavity beneath the apex of the root, it would leave it in a more satisfactory condition. Long medication is something I have always avoided; I do not

believe in it, and I do not believe it is necessary. I do not believe it is necessary for any man to treat a tooth but a very short time, but what harm can come from inserting the broach and assisting in drawing out of the canal this blood and pus I do not know. Instead of using gutta-percha I have used sandarac, and I have always felt I had very good success.

The PRESIDENT: Have you ever used peroxide?

Dr. PENBERTHY: Yes, I have used that.

Dr. W. N. MURRAY: I think the society has been rather headed off by the doctor in the title of his paper, when it was supposed he would treat of "simple cases" of pericementitis. I think a majority of us, if not all of us, have discarded the old treatment of these cases, especially of those "simple cases" of pericementitis, as his subject has indicated to us. The doctor made some reference to formaline preparations in his paper. I have used formaline, and I consider successfully, as an antiseptic wash in the root canals. I do not leave it in the canal, however. When these cases come to me with putrefied pulp, with a weak formaline solution I wash them out and I have had very good results from it. I believe scientific researches and investigations of this agent, formaline have not demonstrated that it is the most powerful disinfectant we have, but that it is a very valuable remedy. I know there has been some objection made to this in some of the other societies, and I think that unless the man in whose hands it is placed thoroughly understands the drug he had better let it alone. It is a very powerful drug and somewhat dangerous to use unless great caution is practiced.

I am very much pleased with Dr. Wedelstaedt's paper; in fact, I had the pleasure of listening to it prior to this meeting, and I want to say right here that I wish every man that belongs to this society, and every man in this Northwest who is in the practice of dentistry, would practice as Dr. Wedelstaedt does. I had the pleasure of remaining in his office a few hours and seeing patients that came in, and I was surprised with what I saw in his office regarding treatment and other work of the profession, and I cannot help mentioning it here. I was very much gratified with what I saw and heard.

The PRESIDENT: How did the patients go out, Doctor? (Laughter.)

Dr. MURRAY: Dead broke. (Renewed laughter.) They went

out good naturedly. I am very glad to hear this paper the second time. There are many points in it that I did not grasp in the first reading.

The PRESIDENT: Have you ever used formaline as a mummifying agent?

Dr. MURRAY: I have never used it that way.

Dr. C. W. NUTTING: I would like to ask Dr. Wedelstaedt whether he ever found a cavity after he had taken out the nerve where there is a soreness, a sensitiveness so he could not close it up, that is, in the pulp cavity. I had that experience with one case; I could not close it, I could seal it, but I do not know the cause of it.

Dr. H. A. KNIGHT: The first thing I want to do is to attack the title of Dr. Wedelstaedt's paper, "Simple Cases of Pericementitis." It seems to me he described compound cases the first thing. I never heard of a simple case of pericementitis with pus in the pulp cavity. It is the result of inflammation in the pulp prolonged until you get disintegration of the tissues. A simple case of pericementitis is one where there is no connection with the pulp, just an irritation around the tooth, and if the paper were treating of simple cases of pericementitis those would be the class of cases that would be described. In the second place the treatment is not rational. Would you call it rational to take a simple case of pericementitis and bore into the pulp or near the pulp? I think his treatment of the case he described is on the whole good. That case where he used a ligature is something that struck me as being a little new, the application of a weight or tension drawing the tooth out and relieving the pressure. Of course, that would give immediate relief, but I have had many cases of simple pericementitis which I have treated with counterirritation, a slight dose of morphine, giving one-fiftieth of a grain every hour until I had used one-fifth of a grain, and had excellent results. I would commend the use of counterirritation for relieving the pressure upon the pulp, as that gives almost instantaneous relief.

Dr. C. A. VAN DUZEE: I want to say that I agree with Dr. Knight perfectly. We have passed over the question of simple cases and got into the subject of complicated cases immediately. Dr. Searl spoke of the prevention of pressure in these cases. I think that is one of the most essential things. I also think in cases of teeth having more than one root and you find the pain

localized in the upper molars you find the root the seat of the disorder, and in turning your drill on the pulp chamber you can approach it at right angles, exerting the pressure toward the root, which will have the effect of saving the patient a great amount of suffering. I think it is unwise to attempt the cleansing of the pulp canal at the first sitting, and in my own cases, and as Dr. Penberthy says, I believe in using something that will stop the orifice perfectly against the fluid of the mouth, and at the same time permit a slight expansion of the contents of the canal, but I do not think gutta-percha will do this so well. You can take a test tube and produce pure cultures without any difficulty whatever, using simply a wad of cotton. If the men who use the cotton would saturate it with sandarac, they would find it to be a perfect plug, and it would give better satisfaction than a gutta-percha plug. My own experience in my early practice was that very often an accident would result in pressing the contents of the plugged canal into the root pocket and thereby serve as a further source of irritation, which might be avoided by using something less stable than the plug.

Dr. H. A. KNIGHT: I want to say a few words on the treatment of the pulp canal. In regard to these infected canals where he finds pus it is simply the result of the partial death of the pulp, but he only deals with teeth that have to be opened, if I understand him correctly. My practice has satisfied me that our trouble all comes from lack of cleanliness. If we can bring ourselves to understand that if we are absolutely clean, we will have solved the whole trouble. Many dentists do not know what it is to be cleanly in their profession. I have been in the offices of dentists and have seen them do an aseptic operation. They would take a broach and pass it through the flame; the shape would not quite suit them, and they would bend the broach in their fingers and not pass it through the flame again, but use it immediately. The doctor applies his rubber dam and has all the surroundings aseptic before he does anything, and then you take it for granted that he cleans his instruments and keeps his fingers off. If dentists will only watch themselves they will find they soil some of their instruments; they pick up the pliers or some other instrument that is not clean, and the whole trouble comes from lack of cleanliness. You must watch yourselves at every corner. You may be careful at one place and slack at another.

Dr. T. B. HARTZELL: I want to thank both Dr. Wedelstaedt and Dr. Knight for what they have said this afternoon, and I want to emphasize what Dr. Knight has said in regard to broaches and the care of other instruments we use. The hardest lesson I ever had to learn in my practice was to keep my hands and instruments clean.

As far as Dr. Wedelstaedt's treatment of the class of cases that he has described is concerned, I have absolutely no comment to make that would be of value to the society, because he has thoroughly covered the ground. I have known men who were aiming at the same results he is striving for, but he knows that it is about the best plan that has ever been brought to the notice of the profession in treating that kind of cases. I have been using it for two and a half years. The only difference between Dr. Wedelstaedt and Dr. Knight is a difference as to the kind of cases they call pericementitis, and that appears to be an honest difference, and I am glad to see it exists; it adds spice to the gathering. I had the pleasure of attending the meeting of the State medical society a few days ago, and listened to several papers by surgeons, among others Dr. Walter Courtney, of Brainerd. Courtney has been treating surgical wounds for a good many years, being the surgeon of the Northern Pacific Railroad, and his method of treating wounds is exactly the same in principle as the method of treating this sort of inflammation of the pulp. If the pulp is dead or if the pulp is not dead, his method is exactly the same. The sooner we as dentists come to recognize the fact that nature does it all in healing the diseased part, that it is entirely done through natural and physiological influences, and that all we can do is to aid nature in preventing infection, and where infection exists to asepticize and antisepticize the part, then we have learned the lesson that will be the most useful, whether we practice medicine, surgery or dentistry. In Dr. Wedelstaedt's method he gains a clean cavity by the shortest possible method, and he recognizes the fact that as soon as he has gained a clean cavity every additional treatment he makes only prepares the ground for extraneous infection.

I want to add a little thought in regard to the care of broaches. It was the hardest thing I ever had to acquire, the habit of using clean broaches in treating root canals. I keep a dish of pure carbolic acid at hand in which I place my broaches, and after using

them I drop them back in the pure carbolic acid. I do not believe in using pure carbolic acid in root canals, but I believe that method of keeping clean broaches is a good one. The carbolic acid is changed every week or ten days and kept nearly pure. It will not rust the broaches and they will last longer and give more service than if kept in a drier.

Dr. E. K. Wedelstaedt (closing): *Mr. President:* The first thing I want to do is to thank the different gentlemen who have taken part in the discussion of my paper. There are one or two to whom I wish to pay my respects, and as you are all pretty good men, it is somewhat difficult for me to know where to begin.

First of all, when I read a paper before the members of any society, I know exactly what I am talking about. Dr. Knight, I regret exceedingly to say, speaks of having an inflamed pulp in his bicuspid. I think if it had been inflamed, and he suffering as he said he was, he would not now have life in that pulp. I think Dr. Knight has confused a hyperemic pulp with an inflamed one. Pulps recover from hyperemia very frequently, and they may from a condition of inflammation; but to have the latter, it would be necessary to have an exposure of the pulp. I do not say that you cannot have an inflammation of the pulp without an exposure; this can take place, but it is the rarest thing in the world.

I am unwilling to say anything about cotton and sandarac varnish, unless it is to say, I know of something better to use, and the more we use this something better, the better it will be for our patients, and the more cleanly will be our operations.

I want particularly to thank Dr. Hartzell, and Dr. Knight also, for what they have said about cleanliness. If there is a man in this room who questions what these gentlemen have said, I wish him to try the following the next time he has occasion to treat a simple case of pericementitis. Proceed as I have called attention, after the pulp has been removed, wash out the canal repeatedly with alcohol, say a dozen times or so, and then merely dress that canal with cotton, and then fill the cavity in the tooth with gutta-percha. As Dr. Hartzell says: "The patient will return in a week and you will find that cotton as sweet as the day it was placed in that canal, provided your hands have been clean." It is as the gentlemen say, merely a question of cleanliness. Too much stress cannot be laid on this matter of cleanliness.

In regard to a change of treatment of which some one has

spoken, I have a little story that will illustrate this much better than anything else I know of. I have one family that have been patients of mine since 1881. One of the young ladies has been a great friend and a patient of another dentist in our city. Several years ago, she walked into my office one day and said, "I have some trouble with a tooth. Would you please look at it?" An upper right lateral had a fistulous opening. The tooth was beautifully filled. She said: "What is the trouble? I have gone each day, for three years, to have that tooth treated, and still it will not get well. I am getting tired of having it treated, and I want to know if you can tell me what the cause of the trouble is." After removing the filling of the lingual pit, I discovered that the previous operator in opening into the pulp canal from the lingual pit, had drilled straight through the root of the tooth linguo-labially and for three years he had been shoving his cotton and medicine into the gum. Yes, I think it is a good thing to change treatment sometimes, and in regard to this case, I think it was a most excellent thing.

There is yet another case I want to tell you about. A gentleman came to see me several months ago and said: "Can you examine my wife's teeth this afternoon? Would you please make an appointment?" The time was set aside. Thereafter he said: "I would like to tell you about this case before she comes in. For three months I have been sleeping up in the garret. I could not go into my wife's room, as I thought something was apparently wrong with the sewer connections, although my wife always said she could not smell anything and knew it was my imagination. But as soon as I opened the door leading into her room, there was that terrible smell, enough to knock an ordinary man down. I moved into the attic and I have been there ever since. This morning I went down and got the sewer inspector and we drove up to the house. We went over the entire house from cellar to garret, but his instruments showed there was no sewer gas anywhere. Just as we were leaving the house, my wife stepped up to the door and said to the inspector, 'I am so glad you have not found any sewer gas. I have been so worried about the children, fearing they would take diphtheria.' I saw the man scowl and step back and then we went to the carriage. As we were driving down town I said to him that I could not understand where that smell was, that I got another dose just

as I was leaving the house. The inspector laughed and said, 'Are you really anxious to know where that smell is?' I told him I was. 'Well,' he said, 'I will tell you where it is. It is in your wife's mouth. That is where it is." I just left the inspector at his office and I will bring my wife here at the time appointed this afternoon and I would like to have you find out what the matter is." At the appointed hour the lady came and I found the two lower second molars (one on each side) contained two unusually large occlusal cavities that had some all but worn-out gutta-percha in them. The rubber dam was placed over one of these and the gutta-percha removed. (It was about as thick as a piece of tissue paper.) Then there was a whole lot of cotton that had been soaked in iodoform. Then canals had also been filled with cotton and powdered iodoform. I want to stop right here and say one thing and that is this: I have been filling teeth for a good many years, but I have never before in my life seen such perfectly prepared canals as I found in both of these teeth. How in the world the man ever enlarged the root canals in those molars the way he did, is simply a mystery to me. Why, the two openings in the mesial root were so large that I would not dare tell any one of their size, for I would not blame him if he would question my statement. I would not attempt to enlarge canals the way this man enlarged these for anything. Well, let us go back to the subject. The tooth was treated with something else besides iodoform after it had been properly cleansed, and then its mate received some attention. The second one was found in the self-same condition as its mate. After I had removed the rubber dam, I said, "What dentist have you been in the habit of consulting?" and she gave me the name of one of our younger men. I said to her, "Drive to his office from here and make an appointment for this day week and let him fill these roots for you. They will then be in a good condition to receive attention." Imagine my surprise when she said, "Do you mean what you say? My teeth are usually treated for six months before the roots are filled." I sent her back, and I think that house has been free from sewer gas since those roots were properly treated. I have no language to comment on treatment of this kind. I think in this case, as in the previous one, a change of treatment was most acceptable to all parties.

Dr. Penberthy asked what harm there was in drawing out part of the pus.

Dr. PENBERTHY: As I understand you to say if you found pus you left it alone.

Dr. WEDELSTAEDT: If, on the withdrawal of the drill from the pulp chamber, it is followed by pus, I would not introduce a broach into that canal at that time. By the gentlest means possible I would get all the pus I could out of that cavity.

Dr. PENBERTHY: What would be your method of getting it out gently?

Dr. WEDELSTAEDT: That would depend on circumstances. If the trouble were in a central incisor, I would pass my finger up on the gum, above the root if possible, and exert pressure. Or I might use a little aromatic sulphuric acid, neutralize it, and then keep drying out the cavity with some cotton.

Dr. PENBERTHY: Why would you object to introducing the broach gently?

Dr. WEDELSTAEDT: For the reason that I would not want to press the contents of that canal into the tissues beyond.

Dr. PENBERTHY: If you were careful do you think that would follow?

Dr. WEDELSTAEDT: I have done it too often and I do not want to do it again.

Dr. MURRAY: Would there not be plenty of bacteria in there already?

Dr. WEDELSTAEDT: My experience has taught me to let things of this kind alone and not stir up the contents of the canals and push it into the tissue beyond.

The PRESIDENT: Would you have any objection to injecting the peroxide?

Dr. WEDELSTAEDT: I never use it for that purpose.

The PRESIDENT: Would you have any objection?

Dr. WEDELSTAEDT: Well, Mr. President, if you will pardon me, I do not know what I should use it for.

The PRESIDENT: Would that be perfectly safe to inject where there is pus?

Dr. WEDELSTAEDT: I would not wish to use it. I believe it was Dr. Nutting who asked me a question in regard to the sensitiveness after the nerve had been taken out. To what do you refer?

Dr. NUTTING: I had a case that came under my treatment where the cavity itself, the pulp cavity, was so sore I could not

pass the cotton in to treat it. The nerve was all out and the cavity was thoroughly cleansed. I opened into it. It was a case of pericementitis.

Dr. WEDELSTAEDT: I cannot tell you, sir. I do not know anything about any such cases.

Dr. NUTTING: I could not put a piece of cotton into the nerve cavity, I could not place it in on account of the pain.

Dr. WEDELSTAEDT: I have never had a case of this kind.

Dr. C. H. GOODRICH: You did not find enough of the root canal. You did not have all of the nerve out.

Dr. WEDELSTAEDT: Some one has said something about formaline. I think it would be well for those interested in this agent, to read what Dr. Peck has published about it in the REVIEW and in the *Cosmos*. Formaline is an irritant, pure and simple. About three years ago, some one called my attention to it and said that a two per cent solution would keep extracted teeth sweet and clean. I made what I thought was a ten per cent solution and placed it in a bottle with some extracted teeth that I had in my office. About six months afterward I had occasion to go into this bottle and I got a first-class demonstration of its value. I think the quickest way for you to find out all about formaline is to give it the same kind of a trial as I did. I do not think it compares with beechwood creosote so far as keeping teeth of the kind I have mentioned in a good condition.

I am very glad that Dr. Murray called attention to this matter of treatment. He says that he feels that nearly all of us have discarded the old method of treatment that was in vogue for so many years. I do not question but what Dr. Murray has done so, but I know positively that such is not the case. If I felt that this were so, I should not be here at the present time nor should I have prepared and read you the essay that I did. I believe, as I said in my paper, that there is more room for reform, and I trust this meeting will be the means of inaugurating that reform in the methods for treatment of the cases to which I called your attention and to chronic cases of pericementitis, than in any other department of dentistry. I think the day has passed when an intelligent man will use iodoform. I think the quicker everybody dispenses with that remedy, the better it will be for themselves, for their patients and for those with whom the patients associate. I think the quicker iodoform is left out of chloro percha, the better it will be for all,

also. There is just one thing iodoform is good for and that is, for making a big stink. Microörganisms grow right in the powder. This is not new. Dr. Black called your attention to it way back in 1889. What benefit then can a remedy of this kind be to us when we use it as a germicide? Why, to show you how necessary it is for us to have a reform in this matter of treating teeth, I will state a little occurrence that took place within the last month. I do not question but what this will amuse a great many of you. It was half past eight on a certain Saturday morning that my telephone rang. As I was alone, I answered it. The man at the other end asked, in the most piteous manner possible, if I was busy. I said, "Yes, I am always busy." He said, "In the name of God, cannot you make time for me? I am Dr. Blank." I said, "Yes, I always have time for a dentist who is suffering." It did not take him very long to get to the office. He said the nerve had been taken out of an upper left second bicuspid two or three days before and he had been in torment ever since. On examining the teeth, I found a large mesio-occlusal cavity in the upper left second bicuspid that was filled with cotton. I at once placed the rubber dam over this tooth and the adjoining teeth. At a point near the linguo-gingivo-axial angle I found a piece of cotton. I took hold of it and pulled a long thread of cotton from a canal that had an opening at this point. You will scarcely be able to believe me when I say, that some one had made an artificial nerve canal clear to the end of the root. I told the doctor of this state of affairs. I saw that the previous operator had not removed the pulp. I told the doctor, "Why, the pulp chamber has not been cleaned in this tooth." He said, "I know it has. I saw the nerve with my own eyes." I saw that argument was useless, so I gave him the mirror and opened into the pulp chamber, and removed the pulp. I asked him, "What do you call this?" It is unnecessary to repeat his remarks. He told me that seven dentists had been working on that tooth for three days and not one of those seven dentists knew where the pulp chamber was in the second bicuspid nor if they had found it, would they have known how to properly cleanse and treat it. I do not think it is necessary for me to more than cite this case to show you whether or not it is necessary for each and every one present to lend me his assistance in inaugurating the reform I have spoken of.

I do not know, Mr. President and gentlemen, as there is any-

thing more for me to say in regard to this subject, unless it is that since Dr. Black first called my attention to this method of treatment, I have never removed a dressing from a tooth on account of subsequent pain. Yes, there is one other thing. I quite forgot that. I do not use carbolic acid for these cases.

Dr. ALFRED OWRE: I would like to ask the consent of the society to ask one question. [Granted.] Dr. Wedelstaedt made the statement that we could *not* have inflammation of the pulp without exposure. Is that so?

Dr. WEDELSTAEDT: Yes.

Dr. OWRE: I do not think that is so, because if you go back to the etiology of inflammation you will find bacteria named as one of the causes, and they may be found in the blood stream at times; not always there. I just want to get that clear, as it is an acknowledged fact that you can have inflammation of the pulp without exposure, and you may also have that inflammation go on to pus formation.

Dr. H. A. KNIGHT: *Mr. President:* I do not want to take up the time but a moment, but I do dislike to have Dr. Wedelstaedt get up here and close the argument in the way he did without having a chance to defend myself. I have heard of that word "hyperemia" before. Hyperemia, it strikes me, means an excess of flow of blood to a part. I never heard of hyperemia being pus. I never heard of pus without inflammation. Is not inflammation the successor of hyperemia? Is not hyperemia the first stage of inflammation? I never heard of having pus clear to the end of the root, which means, according to his own terms, total destruction of the pulp without ever having had inflammation. Without total destruction of the pulp there never can be any danger of forcing infection back into the peridental membrane. He owned up he was afraid of having peridental infection by forcing the pus back through the apex of the tooth. I think the paper is incorrectly named.

Dr. F. H. Orton, St. Paul, read a paper entitled "Demonstration and Clinical Paper on Porcelain Work." See page 976.

DISCUSSION.

Dr. T. B. HARTZELL: I would like to know what has been the practical experience as to the wearing ability of those crowns. The fact that it stands 1,000 pounds or 2,000 pounds stress does

not signify anything. The accumulated stress amounts to millions of pounds in a year, and it is not one extremely powerful jab that breaks the crown, but it may be the repeated pressure of many occlusions, therefore I would like to know what the effect is of repeated occlusions in actual use.

Dr. ANDREWS: I do not think I have any fault to find with Dr. Orton's paper. I think it is good doctrine all the way through, and all the points were well brought out. The matter of changing the contour is a very important thing; and the preparation of the root, in cases where we take away or change the tooth structure in fitting the band we should restore that, because if a space is left there the food is very apt to cause irritation. In regard to the strength of the crown, there is no question about its being able to withstand any stress brought to bear on the tooth. As the doctor says, it is necessary to have sufficient body; you do not want the porcelain to run out in thin edges, where it is liable to be fractured, but if made properly I do not think there is any ordinary stress likely to break it.

Dr. C. H. GOODRICH: Will Dr. Andrews explain his method of fitting the band?

Dr. ANDREWS: I think that is out of order in this discussion.

Dr. GOODRICH: That is just where the whole thing hinges, in fitting the bands around the root; and I believe a great many men in this room do not understand how it is done. I got a good many valuable points from Dr. Orton's paper myself, and if any one wishes to speak on it the points can be brought out.

The PRESIDENT: The essayist explained that in his paper, hence I think it would not be out of order for Dr. Andrews to answer the question.

Dr. ANDREWS: I do not use a band in my work. I have a method of swaging that I use. I do not see the necessity of a band on the buccal or labial side of a crown, and for that reason I have devised this method. I swage on a half cap. The idea is not original, I have forgotten from whom I got the idea. I arrive at about the same result that Dr. Orton does with his process.

Dr. W. N. MURRAY: Do you make your cap and band of one piece? Is it swaged out of one piece?

Dr. ANDREWS: Yes, sir.

Dr. JONES: I would like to ask Dr. Orton in what condition he has left the root before setting the crown to the root. How long does he wait; in what condition does he set the crown?

Dr. Welch: I want to ask Dr. Andrews how he swaged that cap and band in one piece to fit the root, whether he took an impression of the root or not. Could he take an impression of the crown off the gum?

Dr. Andrews: I take an impression with Teague's impression compound after the root is trimmed to the level of the gum; that gives me the outline of the root. Then I fill the impression with Mellotte's metal; that is done immediately. After cooling the die is trimmed away to bring the roots out in relief and a counterdie run. I then cut down the root on the lingual edge the depth I want. Then I cut my model off where I want to swage so I have an approximate cap which is then placed on the root and burnished to fit. It depends a good deal on the operator, whether he takes considerable pains to get a perfect adaptation of the root.

Dr. Goodrich: Pains the patient, too?

Dr. Andrews: Not at all; not a particle. I use a thirty-two gauge platinum in the cap.

Dr. F. H. Orton (essayist): The first question was, "What about my own experience?" I will say that in looking over the list the other day of the different crowns I have put in, and I have put in two or three hundred, I had six failures; two of them because I had fused the body too much, there was a big bubble in the center, and the others came off before I soldered the bands to the post; the porcelain came right off. That is a pretty small percentage out of three hundred fitted in three years. That is the record so far as I know. I think Dr. Andrews makes about the same crown I do, but I think his method takes more time. Dr. Jones asked the question as to how long I left the root after putting on the crown. I put the crown on the same day usually. If it is one of the six incisor teeth I never take the impression, I always crown the tooth up in the mouth. It is the only way to get a perfect reproduction around the gum margin. Crowd the tooth back so it will have the same appearance as the rest of the teeth. I will say I do not lacerate the gum so much in trimming this sort of root (indicating) as we do when trimming in trying to get the enamel off. In that way you lacerate the gum a good deal. It does not require much laceration of the gum septum to cause it to recede.

On motion of Dr. Hartzell, a vote of thanks was extended to Dr. Orton for his valuable and interesting paper.

REPORT OF CLINICS.

Moss fiber gold filling (new hand pressure gold condenser). Demonstrator, Dr. C. W. Jones. Reported by Dr. Bond.

Dr. BOND: Dr. Jones gave a demonstration or a bench clinic, in other words, describing a method of placing and condensing soft gold in disto-occlusal cavities of bicuspids and molars with a matrix. If I had those instruments of Dr. Jones' here I could better describe the method; at least it would help to illustrate the matter, although I doubt whether I could make it clear even with the use of the instruments. The one he used first was an instrument with a short, thick handle and a little wheel with serrated margins, the circumference of the wheel covered with serratures, and this wheel revolving on the axis of the instrument, by putting in a soft piece of gold and rolling it along the gingival margin of the cavity he got it placed without any slipping or sliding. (If I do not get this right I hope some one will correct me.) After that he used two instruments, each of which by an ingenious slit in the handle permitted a quarter turn of the point when the pressure was applied. The object of having two instruments was that one turned one way and the other another, right and left, giving an effect much like the De Trey method which Dr. Goodrich used this morning in his clinic. That, I think, covers the ground as well as I understand it, unless I had the instruments here to recall further points.

The PRESIDENT: Any criticism to make on the preparation?

Dr. BOND: The demonstration was not to show a cavity preparation, as Dr. Jones clearly stated; it was merely to show the use of the instruments which he devised.

The PRESIDENT: If there are no further remarks perhaps Dr. Jones would like to say a word on this clinic.

Dr. C. W. JONES: I will only add that in using the matrix in distal cavities the point is somewhere where we should be adapting the gold over the margin of the cavity, condensing the solid portion of the gold against the walls of the cavity.

REPORT OF COMMITTEE ON ARMY AND NAVY LEGISLATION. BY DR. L. P. LEONARD, CHAIRMAN.

DISCUSSION.

Dr. C. A. VAN DUZEE: As one of the members of the committee I wish to say that unless the society sees fit to vote a sum

of money for expenses it will be practically impossible for the committee to continue its work. The committee has already incurred an expense of $10, and personally I am of the opinion that it would be necessary to incur an expense of some $40 for the ensuing year, and unless the society sees fit to appropriate such an amount I think the committee had better be discontinued.

Dr. L. P. Leonard: Your committee has kept in close touch with the national committee, and I am personally acquainted with three of them. The national committee has done considerable work, but I question whether they have done as much actual work in the way of investigation and getting together facts as your State committee has done. I question whether they have had a meeting of the committee I think most of the work was done through the chairman, Dr. Donnelly. He has labored quite hard, and I do not think the national association is helping him in the way it should. It is my intention when at Niagara next week to make a motion that the national society help him financially. I think he should receive more financial aid. He is using a great deal of his time and getting nothing for it. I have had letters from Manila, I have had letters from some of our 13th officers, and they depict an awful suffering in the Philippines on account of the lack of care of the teeth. About all they can get is a little advice and attention. The national committee had an amendment to put on the general army bill, but it was voted down. We are not personally interested in the matter. We have all we can do to take care of our practice, and it is not likely that any one is interested except from a humane standpoint and a little professional pride.

Dr. Alfred Owre: It seems to me this question is a national affair, and I think if it is left entirely in the hands of the national committee, which represents the whole country and is the most political body, that will be sufficient. I do not think it is feasible for us to maintain a State committee; I think there are a good many State societies that do not do anything of the kind, and I think it is entirely out of the question for our society to accomplish anything. We have been turned down by the government twice. We have been turned down by the surgeon-general. If we feel so humanitarian we can relieve ourselves by entering the service. If we want to do that kind of humane work, missionary work, there is plenty of chance. We have been turned down and what is the use of agitating this matter further? When the public

sees that we need dentists in the army then they will give us our proper place. For that reason I think it would be better to discontinue this committee and relieve them of their valuable services, because it would be rather expensive to maintain the committee any longer.

Dr. C. A. Van Duzee: I would like to say a few words in reply to Dr. Owre. I want to go on record in this matter, but I do not want to speak as a member of this committee. Up here in Minnesota we take pride usually in being in the van if there is anything to be gained for us in the way of reputation and honor, and we have been heretofore in the front rank, and while it is true, as Dr. Owre has said, that we have nothing to gain in this matter at present, yet we may be sorry in the future if we stop where we now are. I would like to see the committee continued if the society thinks it can afford to spend any money along that line. Supposing it does take years for us to accomplish something, it would be a source of professional pride to us, and as a member of the Minnesota society I would be in favor of taking it out of the hands of the national committee and accomplishing it ourselves if we could; but we have nothing to lose by doing what we can.

Dr. L. P. Leonard: I wish to correct a few statements made by Dr. Owre. The first is in regard to other societies participating in this movement. A number of State and city societies and the Southern National Society have committees out. It is not unprecedented by any means for Minnesota to have a committee. On the contrary, it would be simply placing ourselves alongside of four other State and city societies. The Detroit city society has a committee out. I wish also to correct a statement in reference to Dr. Sternberg's position. He opposed this movement until last winter, but he gave the national committee his word that he would not oppose it any longer, in fact, he is getting to think it is a necessity. As to entering the army, it is practically impossible for a dentist to enter the army and practice dentistry. I know that from the experience which a relative of mine had. I know it also from a letter from a dentist in San Francisco who told me there were two dentists in the barracks with the 1st California Regiment, fully equipped with an outfit, but they were not permitted to practice.

THE STANDARD. PAPER BY DR. H. VAN TASSEL, MARSHALL.
(See page 792.)

DISCUSSION.

Dr. T. B. Hartzell: I wish to thank Dr. Van Tassel with the knowledge that I think the same will appear in the proceedings, because he has written a paper here worthy of consideration at our hands and one that exhibits to us the fact that he has given the subject some thought. Dr. Van Tassel has written an excellent paper and one that we can afford to spend some little time in discussing. The latter part of his paper really pictures a kind of millennium, if it could be brought about, and the earlier part of his paper portrays the fact that the doctor has been unfortunate in his association with examining boards. I scarcely think that he has correctly sized up the matter. At any rate, if he has encountered a case of examination Pharisees I think he has encountered another kind of board than the board that passes upon the qualifications of students that enter a dental college. He must know, if he has investigated the requisites of matriculation in any of the colleges that belong to the Association of Dental Colleges, that a man must have almost the qualification of a high school course before he can enter; and in 1900 almost all of the colleges will have adopted that standard. In fact, if he has not this knowledge it would seem to argue that he has not consulted the catalogues of the best colleges in the country. He might also know in regard to entrance examinations, if he has consulted the catalogues of the best colleges in the country, that the examinations are in many cases entirely out of the hands of the dental faculty. Take our own institution in Minnesota, for instance. The entrance examinations are held by the board appointed by the president from the scientific departments, because the branches upon which students are examined upon entering our college are those that are taught in the scientific departments and not in the college of dentistry; therefore it has been seen fit by the regents to place these examinations in the hands of men who teach those branches in the scientific departments, taking it out of the hands of the college of dentistry, and when they come to us they have passed examinations held by those appointed for the purpose, and this certainly relieves this institution in particular; and I know that is the case in several other institutions of like nature, it relieves them from the charges made against their faculties by the doctor.

In regard to this unadvertised course of which the doctor speaks, I think he must have been unfortunate in the school in which he gained a knowledge of those unadvertised courses. He certainly must know that every college belonging to the Association of Dental Faculties prohibit in every manner possible the so-called unadvertised courses. They use all reasonable means of preventing that sort of dental instruction that he deplores in his paper. He seems to forget that honesty is an individual attribute that men must gain in other fields than in the practice of dentistry. What I mean is that if a man is not honest when he comes to an institution and does not live up to the rules and requirements of that institution that the burden lies with himself. The teaching institutions of the country cannot go further than simply pushing up their requirements prohibiting such cases as the doctor bewails, and if men invade those we cannot help that. The place to commence to make good men is in the home; it begins with the very earliest training of the man. If a man is not honest when he comes to an institution you cannot make him honest. You cannot legislate for those men by rules.

"We commend most heartily that every teaching institution in the country (I speak of dental colleges) were able to furnish clinics and to furnish clinical material free of all expense to the public, and in a slight measure that has been attained."

While I admit that some of the benefits that he wishes could be attained would be attained by such a course, still it is a question for discussion whether it would be the best in the end, because we want to get free clinical material to furnish our students that would give service to those only who are unable to pay, and in this prosperous land there are very few people who are unable to pay for dental services even rendered in a clinic; therefore I do not quite agree with the doctor in desiring the time to come when people shall receive from a teaching institution services absolutely free of cost. It is somewhat educational to them, particularly the class of people or patrons who have never had much dental work done. It teaches them an appreciation of the value of dental work done, and the price they pay is proportionately as great as the price the ordinary patient pays to the ordinary practitioner, because those people are certainly poorer and they have less to pay with.

That all the teachers in all the teaching institutions of the

country might be paid salaries commensurate with the value of their services is certainly something that is to be desired, because it would enable those men to give their very best effort to their chosen work; and many of the best teachers in the country are certainly hampered financially in attaining the best results, both as teachers and in the way of instruction given, for they are paid so little that it becomes necessary for them to practice and do work in that line. I heartily commend that feature of the paper, and would that such a condition of affairs as the doctor desires might come about.

I thank the doctor for having written such a paper, and I know there are those here who can offer some thought other than what I have expressed, some one who is better able to speak on the subject than I am.

Dr. L. C. Davenport: I am very glad to hear Dr. Van Tassel's paper read. I think the doctor may possibly be right in the way he talks about college practices at the time he attended. It has not been very long, as we all know, since the majority of colleges required entrance examinations, and I think Dr. Van Tassel will bear me out in that statement, and I think we should feel encouraged. I think the class of students that are graduating, that are coming out of the colleges now, are much better than they have been for years; I think they are improving every year. From our small town we have three high school graduates attending the University of Minnesota, and I think the same holds equally good with other callings. I think it remains with us to encourage only those that have the education preparatory to entering dental colleges. Several times I have had young men say to me who have had a piece of work done that took several hours and perhaps cost several dollars, that dentists made money easily, and that they could make $10 to $12 per day. A little incident comes to my mind now of a young boy who comes to my office occasionally, and whom I asked what he intended to be when he got through school; he said he intended to be a dentist and extract teeth, because it only took a minute and a dentist got 50 cents, and that his father was going to make a dentist of him because that was an easy way to make money. Some have an idea that dentistry consists of nothing else than extracting teeth. At the same time I think we should feel encouraged in the gradual advancement of requirements for entering our dental colleges.

Dr. T. E. Weeks: I can only commend Dr. Van Tassel's paper from one standpoint, and that is on the assumption that he was honest in his desire to contribute something that would have a bearing and be of some influence toward the elevation of the standard of dentistry; but the paper is full of misstatements and thus cannot be commended from any other standpoint. I do not think that a man who has never attended a meeting of the Faculties' Association has any business to write that kind of a paper, because if he has never attended a meeting he knows nothing about the efforts being made toward a higher education. When you reflect that in 1839 the first college was started, that dentistry became an entity as a profession, we have great reason to feel encouraged with the advancement in the profession to-day. Dr. Hartzell made some misstatements inadvertently. All of the colleges of the country, and even a majority of the colleges of the country, are not coming to a high school standard in 1900. All of the colleges of New York are already in that standard through legislative enactment. The University of Minnesota will put on that standard in 1900. Probably one-third of the colleges, may be not so many, will be on that standard in 1900. The tendency is upward, and as far as this phase of the question is concerned, it hardly would be proper for the society to express itself in a resolution that it is the sense of the society that students coming to members of the society be urged not to enter the dental college until they had secured a high school education for their own sakes. So much of the resolution would be proper, but the other words in the resolution are certainly Utopian, but there are forces at work that will undoubtedly, probably in our own lifetime, bring some of these things about.

Now in regard to the matter of the unadvertised courses, the remedy suggested is not a practical one. It is agreed by philanthropists that charity, the absolute giving of service or money, is degrading to the recipients. That is the opinion of philanthropists and charitable institutions. The only thing that can be done in an infirmary is to have it as honestly conducted as possible, and an infirmary is absolutely necessary to a dental college. It cannot exist without an infirmary as well as a medical college can exist without a dispensing room. It is where the student learns to apply the technical teaching, the technique of the operations he expects to do throughout his professional life. It has always been

strange to me that so many of the profession could not see that if they would support and work in consonance with the gentlemen who are running the infirmary it would accomplish two things: It would compel honesty, because the men running the infirmary would be watched more closely than they are, if they assume, as some do, that men who run infirmaries are dishonest, which I deny. There may be some dishonest, but the majority are not dishonest; and I think when such statements are made they ought to bear the names of honest men, because it is not advancing the interests of dental colleges to have such innuendoes thrown at them, and I protest against it; and if such broadcast statements are made he should give the name of the men he thinks are dishonest. If the profession, if the majority of the profession, or even a respectable majority of the profession would support the infirmaries which spring up in our midst in connection with the dental colleges, would go there and familiarize themselves with their methods, advise with the men, who would be willing to take their advice, I know that one evil would be eliminated and we would get into the infirmaries more of those that we do get already, those people that go to the places of so-called dentists that we all dislike and all wish were out of existence, that is, the "cheap John" or advertising men. It is a fact that people who go into the average dental college get better service, more honest service than they can get in the average advertising office. There are exceptions; there are some advertising offices where very good work is done, but in the average advertising office the work does not come up to the average infirmary work, and especially in those colleges which allow only the seniors to do advanced work. Where men are allowed to go into the infirmary and do all kinds of work the first day they get there, that is different. In most colleges the work is graded, as most other work is graded, and they are given work in proportion to their ability and advanced according to their progress. If the members of the State society, the members of every State society, will take a little interest in these infirmaries or in the institutions which have grown up in our midst, governed by the State or by university affiliation, there can be a great deal more done than there can be by censure. Censure does no good, but shoulder to shoulder and elbow to elbow work is what counts. We are all working for the same end and we ought to work together. Until some better plan is evolved for the con-

duct of dental infirmaries the only thing we can do is to see to it as individuals, if we doubt that the infirmaries in our midst are honestly conducted, that they are conducted honestly. Let us go and find out; that is the thing to do. Let us send a committee from the society to find out. If not honestly conducted let us compel them to be; that is practical. If the men conducting the infirmaries are making mistakes if they are honest they will be willing to rectify those mistakes. I think these are practical suggestions.

I am glad Dr. Van Tassel wrote his paper from some standpoints. I am glad to know that there are men in the State interested in this thing, and I should be very glad to meet and know Dr. Van Tassel, and be very glad to give him every opportunity to not only investigate our method, but to suggest improvements where he says improvements might be made; and I think every one of my colleagues present, and those who are not present, would say "Amen" to that statement. I am thankful for having an opportunity to speak, because I like to talk on this subject.

Dr. W. N. MURRAY: I think if I remember correctly from hearing that paper read that Dr. Van Tassel drew inferences that the prices charged in the infirmaries were practically the prices taught the students to charge in going to and from these schools. I do not know whether the infirmaries or any of the colleges recommend to students what prices they shall charge. I would like to ask Dr. Weeks if they do make any recommendations of that kind.

Dr. T. E. WEEKS: I think such an inference as that is ridiculous on the face of it, because the men who teach in colleges usually are the men who get the best fees, and it is quite unnatural that they should officially or unofficially impart their ideas of fees to the students. A word of explanation in regard to our own infirmary will hold good in regard to the majority of infirmaries in the country. Now when it is stated that the charge is made to cover the cost of material that does not mean the bare cost of the gold or amalgam, but it means what it costs to get that into its position, to get it used; it means the cost of dispensing; it means the incidental expense of the infirmary. I did not see the statement myself, but recently the statement was published that the largest sum that has ever been received from the infirmary of Minnesota was $3,500. That was the largest sum of money ever

received. There are many things that are not charged for. There are medicines used and many other things that enter into operations that are not charged for. Thus in cleaning teeth sometimes there is little medication, and I know that large quantities of medicine are used up in the course of a year, but there is no charge for treatment of teeth, and I think this is true of most infirmaries. I am certain that Dr. Murray is a well informed man on general principles, and he ought to know how the infirmary in Minneapolis is conducted, and every other dentist ought to know, and if Dr. Murray would spend a half day there he would get considerable information on the subject. That is what I have more than once pleaded for, that you gentlemen would come to our institution and help us by your presence and your instructions, and if there is anything to criticise we would be glad to know it, and in this respect I believe I speak for the majority of the men who conduct infirmaries throughout the United States. My acquaintance with men conducting dental colleges is large, and I know them intimately, and I know the majority of the men who conduct dental colleges are high-minded, honorable and genial gentlemen. I know that to be true.

Dr. W. N. Murray: Dr. Weeks did not answer my question directly. What I meant to get at was whether there is anything in the course so far as charges or fees are concerned; whether there is anything for the students to guide them when they leave the institution.

Dr. T. E. Weeks: In most colleges it is explained, as I have explained here, and it is no secret, it is explained to students that these charges made are simply for the purpose of defraying the actual cost of running the infirmaries. In regard to the large sums of money that have been made by infirmaries, as I have heard stated, I have been told by men such as Dr. Beers, whose honesty I would not impeach, that statements circulated in regard to his college were not true. Dr. Beers has given me figures in regard to his college, the sums of money received in his college, even at the time when accused of making large sums of money, and I know that the sums of money these men draw out of the college are not large. Students are not taught that those charges represent prices in any way, shape or manner. They are taught that it simply represents the cost of giving them that particular branch of instruction.

Dr. C. A. Van Duzee: I would like to answer Dr. Murray's question. I want to say that Dr. Weeks was the professor of operative dentistry at the University of Minnesota, where I graduated ten years ago. As a student I went to him and asked him if he could direct me as to how I should conduct my practice, and he told me very clearly and concisely. I followed his advice and have never been sorry.

Dr. W. N. Murray: I hope that Dr. Weeks or any of the gentlemen present will take it for granted that I have no feeling whatever against the college at Minneapolis. I think I am the best friend it has, and my remarks were made simply to get information. I am glad we have an infirmary, for it is a benefit in my practice and I use it. Many people come to me that are unable to pay my fees, and I often send them over there and give them a letter to Dr. Weeks or Dr. Reid, and ask them to see that they get as good service as possible, and it has often been really a benefit to me.

Dr. T. E. Weeks: That feature was not in my mind at all. I was thinking of the personal visiting, the personal knowledge that comes from an occasional visit to the institution and seeing how things are run. I would like to add that perhaps fully one-half the gentlemen in this room have referred to us patients, not only from the twin cities but from outside, and we are always glad to receive those people and try to do them good. Every man has patients he cannot afford to work for, but he hates to see them go elsewhere.

Dr. C. H. Goodrich: In Dr. Hartzell's remarks he said he thought from the tone of the paper that Dr. Van Tassel had some time been unfortunate in coming in contact with some dental board.

Dr. T. B. Hartzell: I beg your pardon, I said other boards. I did not say dental.

Dr. C. H. Goodrich: When Dr. Van Tassel came to take his examination it was very evident to me that he had recently graduated from some dental college well supplied with fine teachers and professors. Although he might have come in contact with other boards, when he came in contact with this board, his previous experience had caused him to make his calling and election sure in regard to the Minnesota State Board, because in my four years connection as a member of the Minnesota State Board of Dental Examiners I have seen no examination more clearly written, no better foundation, clearly defined and more beautifully rounded

sentences than in the papers received from Dr. Van Tassel. I have met him a number of times personally and found him to be a gentleman of middle age of very good appearance. It is very evident to my mind that the paper is written from the standpoint of a man who has not been around colleges very extensively, and he has made up his mind, not knowing anything about how dental faculties run institutions and the troubles they have; he has seen a number of cases that cause him to think there is a chance for improvement. I understand, when he makes the statement that clinics and the services of professors should be free to those unable to pay for the same, that he gets it from the standpoint of the layman most naturally. He does not know that poor people who cannot really afford to pay Dr. Murray's fees would go to a cheaper man where the work would not come up to the standard of the infirmary. I have often been astonished at the class of people that come to the Minnesota college to have work done, and they evidently found it a hard pill to pay the price they paid even at the institution. I think after Dr. Van Tassel gets more into the practice of dentistry and sees more of the world and of the profession he will take back a little of the statement in "section B" of the resolution he tried to present. I only hope Dr. Van Tassel will be here next year. He is a gentleman deeply interested in the profession and also in the Minnesota State Dental Association, although he is not acquainted with most of you.

Dr. Alfred Owre: I would like to state for the information of Dr. Goodrich in regard to prices, it is very difficult to have these patients have gold inserted back of the bicuspid teeth owing to the expense, which would be $1.50 or $2, and they very seldom have gold put into the lower teeth. The majority of fillings put in the six anterior teeth are put in with cement because they think they do not show quite so much. I have had charge of a part of that institution a portion of the time for the last three years, and sometimes waste a whole lot of time trying to persuade people to have gold put in the mesial cavities in the first bicuspid. They say they cannot afford it. I could expand a whole lot along this line.

Dr. C. H. Goodrich: When Dr. Van Tassel comes in contact with people in his professional services as a dentist he will be surprised, as I was surprised, that some of the people who look as though they had money would find it a very hard matter to pay for the services in the infirmary.

[To be Continued.]

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITOR: A. E. MOREY, PH. B., D. D. S.

MERRY CHRISTMAS AND HAPPY NEW YEAR.

Wishing all a Merry Christmas and Happy New Year, we extend our greeting to rich and poor; to those who are happy and contented; and to those who are not we extend the right hand of fellowship and best wishes for a change in their fortunes. In this period of general rejoicing be optimistic, let the past take care of itself, look ahead, learn lessons from the past, but do not brood over it. If you have made mistakes try and not repeat them; the past may have nothing for you but regrets, the future has everything in store for you—be young again and hopeful. Keep a stiff upper lip and fortune will smile on you. Do not be discouraged. Be happy in your work, be industrious, be cheerful, make friends and forgive your enemies.

We had not intended to preach a sermon, but what there is of it you are welcome to.

CLOSE OF THE VOLUME.

With this issue we reach the end of the thirteenth volume. This journal was first issued November 15, 1886, and prior to that date only one dental journal had ever been published in Chicago, *The People's Dental Journal*; the late Dr. W. W. Allport was one of the editors of that publication. During the existence of the DENTAL REVIEW quite a number of dental journals have been issued from time to time, most of them not being long lived. The field is large and the needs of readers are great so that we believe all journals having a legitimate object in view will have a good number of readers. The DENTAL REVIEW for 1900 will try and fulfill the expectation of its friends. We will continue to publish

reports of the best societies, and papers requiring illustrations will receive careful attention. The Paris congress will be held during 1900 and we will have a good report of that congress. All old readers of the DENTAL REVIEW will find in its pages matters of interest in all practical departments. There will be book reviews and letters and a vast mass of information fresh as the freshest. Subscribe for 1900 now.

HOW FAMILIAR THIS SEEMS!

A few medical writers are victims of a reprehensible habit that is not pleasant to contemplate, viz., the habit of reading the same paper before two or more different societies. When discovered by the profession, as they all are sooner or later, a variety of reasons for their actions occurs to their critics. It is frequently said of them that being unable to write with ease, they must make one production go as far as possible. This is the most charitable view, even though it involves the inference that only the vain desire for personal advertisement could lead them to risk the affront to an audience that should discover it was being served cold victuals instead of the expected warm sustenance. No doubt these writers never stop to consider the magnificent proportions of a vanity that leads an author to think his own production is worthy of repeated self-production. Of many it is said that they are too indolent to write more than one paper at long intervals, and at the same time too desirous of notoriety to refuse an invitation to read a paper before a society, even though they risk offending their audiences by presenting stale matter. The implied affront to the second and subsequent audiences seems to be entirely overlooked by these gentlemen. Perhaps this is a matter of minor importance, but it is certain that some medical writers would occupy a much more dignified position before their fellows did they not have so high an opinion of their own productions. It is a very different affair when a society requests an author to repeat a paper before a different audience from that which first heard it. That is a high compliment to the author, and it is perfectly proper to reread one under such circumstances. For those who are not thus importuned, the far better course is to refuse all invitations that cannot be accepted with an entirely original and new article. Medical editors would rejoice at the accomplishment of this little reform,

medical authors would not so often be charged with reading papers for mere self-advertisement, and medical science could hold its head just a little higher before the world of science and letters. —*Journal of the A. M. A.*

Burning Questions.

Some of the burning questions of the hour may be stated very briefly : Uniform and successful methods for restoring loose teeth in their sockets. There have been many papers in journals and several books written on the causes of loosening of the teeth during the past ten years but no universal, successful treatment has been so placed before the profession that the majority even can practice it to a final issue. What are the principal causes for loosening of the teeth ? Do we live too rapidly, or are our jaws and bony structures deteriorating ? If some one will answer fully and fairly some good may come from agitating this old question.

We have read Talbot's book and Nash's first volume, but not much is to be gleaned from either for practical purposes. Why do teeth loosen in their sockets? Are we able to prevent this disaster by prophylactic measures ? Are the dentrifrices and mouth washes and powders to blame by being used unintelligently, unnecessarily or where are we at fault?

Will filling teeth as now practiced save them ? Is it not true that caries recurs even after the most perfect fillings are inserted ? Are our teeth too crowded or are they too poorly developed ? Are we educating our young too early ? Have we departed too far from primitive modes of living or are our food stuffs properly prepared to supply proper nutrition ? This is another burning question: Do we attempt to save too many teeth ? Are we making a mistake in retaining too many pulpless teeth in the mouth ? Does it pay to spend months and years in making symmetrical mouths by the present methods of correcting irregularities by the mass of the profession ? In other words, should we promise as much as we do to our clients ? In medicine and surgery do the best exponents make such extravagant claims for their work as may be noticed from reading the speeches in dental societies and the individual papers preceding such speeches ? Is it true that a gold bridge or porcelain inlay is an everlasting thing of beauty or usefulness ? Are there no failures ? Do porcelain inlays or gold

inlays preserve the teeth as perfect as well made fillings? Are we running riot in much of our promises to those we serve? Do alloys when weighed and mixed with mercury make water-tight fillings in teeth in the mouth when inserted by the most skillful operators? Answers to some of these questions will be gladly received.

Dental Surgeons in the Army and Navy.

56th Congress, 1st session, H. R. 972.

In the House of Representatives, December 5, 1899.

Mr. Otey introduced the following bill, which was referred to the committee on military affairs and ordered to be printed, to provide for the appointment of dental surgeons for service in the United States Army:

"*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That the surgeon general of the army, with the approval of the secretary of war, be, and he is hereby, authorized to employ and appoint dental surgeons to serve the officers and enlisted men of the regular and volunteer army in the proportion of one dental surgeon to every 1,000 of said army. Said dental surgeons shall be employed as contract dental surgeons, under the terms and conditions applicable to army contract surgeons, and shall be graduates of standard medical or dental colleges, trained in the several branches of dentistry, of good moral and professional character, and shall pass a satisfactory professional examination: *Provided*, That three of the number of dental surgeons to be employed shall be first appointed by the surgeon general, with the approval of the secretary of war, with reference to their fitness for assignment, under the direction of the surgeon general, to the special service of conducting the examinations and supervising the operations of the others, and for such special service an extra compensation of sixty dollars a month shall be allowed: *Provided further*, That dental college graduates now employed in the hospital corps, who have been detailed for a period of not less than twelve months to render dental service to the army and who are shown by the reports of their superior officers to have rendered such service satisfactorily, may be appointed contract dental surgeons without examination."

The continued agitation of this subject has resulted in the

above bill being introduced early in the session. If any of our readers have criticisms or suggestions to offer they should write to their representative in congress and their senators also.

Dr. M. F. Finley, Washington, D. C., or Dr. Wm. Donally are the resident members of the committee having this matter in charge. Now is the time to work for the benefit of the soldiers and sailors.

DOMESTIC CORRESPONDENCE.

Letter from New York.

New York, December 7, 1899.

To the Editor of The Dental Review.

Dear Sir:—Tuesday evening, November 14, was held at the Academy of Medicine in New York a regular meeting of the First District Dental Society, at which Dr. Ottolengui, M. D. S., of New York, read a paper entitled "Jumping the Bite." A patient was presented in evidence of results obtained and it must be said that much of a change was apparent. Whether this was due to ordinary regulation of the teeth forward or backward in the respective jaws or real change in relation of condyloid process to articular fossæ is still a question at issue. Drs. Farrar, Littig, Rhein and others were discussers.

This has always been a much mooted question. With all the regulating of teeth that has been reported before the various societies and the quantities of literature that has been printed, little reference seems to have been made to this subject. Evidently the operation is an unusual one. Strange though, Dr. Ottolengui agreed with one of the gentlemen who discussed the paper that it was one of the simplest operations in regulating.

Dr. LeRoy said that he had jumped the bite *backward.*

His solution of that problem was not acceded to by the essayist nor by some others present. The simplest course for Dr. LeRoy to substantiate such a claim as that would be to present unmistakable evidence of his success in that operation.

The 21st of November the New York Odontological Society held its regular meeting at the Academy of Medicine. The subject of the evening was "Alveolar Necrosis," by Dr. Henry S. Nash, an able writer, and from his own statements a

student for many years of this subject, having had unusual facilities, hospital and otherwise, for making the deductions he has given the profession.

The subject was treated quite entirely from an etiological standpoint.

A few of the impressive parts of his paper were: Chronic alveolitis is a generic term, also that the disease was neither entirely functional nor organic.

A two per cent solution of carbolic acid has been found of great help in the treatment of the disease.

That gum borders become rounded not by infiltration but by loss of margins due to impaired nutrition, and that concretions consist most entirely of bacteria as described by Dr. J. Leon Williams.

Dr. Mills said that Dr. Nash was leading us into the clearer understanding and conception of these cases, and that capacity and earnestness must succeed.

Dr. Rhein took exception to Dr. Nash's nomenclature and harshly criticised his reference to stimulants.

When Dr. Nash had opportunity to respond he said he felt very much like using "spank language" on Dr. Rhein for apparently willfully misunderstanding him; that the strongest stimulants were coffee and tea. Alcohol was way down on the list.

Dr. Rhein became very much confused when Dr. Nash cross questioned him in reference to nomenclature.

Dr. Nash in his closing remarks laid stress on the references made in his paper as to depressed vital force which many times follows illness or grief; sordes accumulate more rapidly and the deep red gum we see then is a result.

It might also have been said that tooth structure shows as markedly the effects of such physical disturbances. Many patients apparently remain immune from caries for years.

Some cause for profound grief arises or serious illness overtakes them and when they present for dental services which many times is hastened by the local discomforts incidental to caries we find that such deterioration of tooth structure has taken place in a few months as had not attained in years before.

"The Dental Educational Problem" is engrossing other minds than those of the "Hornets" and their essayist of last month.

The announcement is received from the First District Society

of New York, that at their next meeting, December 12, Dr. Charles S. Butler, of Buffalo, N. Y., will present a paper the title of which will be as that in quotation marks at the beginning of this sentence.

Drs. Darby, Pierce, Kirk, Guilford, Faught, Jarvie, Meeker, Sanger, Carr, Littig and Starr are expected to discuss the subject, after which a collation will be served.

As a preliminary inducement this society will hold an unusual clinic in the afternoon preceding the meeting at the New York Dental School, 216 W. Forty-Second St., beginning at 1:30.

It will be worth the trip to New York to those living close by to come to town.

Dr. W. A. Capon, Philadelphia, Pa., will demonstrate the relative heat required for high and low fusing porcelains, and exhibit specimens of porcelain crowns and inlays.

Dr. F. A. Greene, Geneva, N. Y., an easy method of making a good fitting gold crown or band.

Dr. C. A. Meeker, Newark, N. J., one way of making porcelain inlays.

Dr. Sidney S. Stowell, Pittsfield, Mass., will demonstrate on plaster cast the anchoring of a bridge to distal surface of cuspid without mutilating the tooth.

Dr. David Genese, Baltimore, Md., the combination of gold with amalgam in large crown fillings.

Dr. W. L. Fish, Newark, N. J., a retaining splint for loose teeth in pyorrhea.

Dr. John I. Hart, New York, will insert a large proximal inlay of high fusing porcelain.

Dr. H. W. Northrop, New York, will demonstrate on a patient the repairing of a porcelain tooth without removing the bridge or pivot.

Dr. S. C. G. Watkins, Montclair, N. J., the removal of an exposed pulp with cocaine without pain to the patient.

Dr. S. Freeman, New York, will show a few new things in electricity.

Dr. George Evans, New York, crown work.

Dr. F. Milton Smith, New York, a practical demonstration of how to treat and fill a diseased root at one sitting.

Dr. W. D. Tenison, New York, demonstration by models the results of regulating; also, the results of extracting the sixth year molars.

The Central Dental Association of Northern New Jersey, otherwise the "Hornets," met in Newark, N. J., Monday evening, November 20, to listen to Dr. Kirk, of Philadelphia. As is the custom of this society at its monthly meeting, they sat down to a fine table d'hote dinner at 6:30; after the complete enjoyment of which the paper of the evening was read.

Among those present from outside of New Jersey was noticed the ever ready W. W. Walker, of New York, accompanied by Dr. S. G. Perry. Dr. L. Ashley Faught, in addition to Dr. Kirk, represented Philadelphia.

Among other "foreigners" present were Drs. Jarvie and Hill, of Brooklyn; Drs. R. Ottolengui, John I. Hart and J. G. Palmer, of New York; and Prof. R. H. M. Dawbarn, an eminent surgeon of New York.

Dr. Kirk's paper was entitled "The Qualitative Factor in the Preliminary Dental Educational Requirements," which he ably presented, so ably in fact that no discussion could be had save that of commendation. The fact was brought out that New York, New Jersey and Pennsylvania were now about agreed upon accepting as a preliminary requirement a high school certificate or an examination equivalent thereto.

Dr. Kirk especially brought out the fact that the manual training as now taught was of vast importance to the pupil in disciplining and training his mind so that in the pursuit of his studies in dental science he would be much more ready to grasp the facts as placed before him than one who had not had such training.

Drs. Perry, Hill, Jarvie, Dawbarn, Faught, Stockton and Ottolengui participated in the remarks, all of which tended to show the deep interest which is being taken in dental education.

One of the speakers related a story not bearing upon the paper, which may be appreciated by those of your readers who know the "Jerseymen."

He said his attention had been called to a representation of what appeared to him to be a mosquito without the sting, but which he was informed was a "Hornet." He said it reminded him of a young physician who had opened an office in a southwestern State, in a little country town, and waited long for patients.

Finally one morning a countryman came riding "post haste" to his office door. The doctor hurriedly admitted the man,

and proceeded to examine a very large, red, much swollen spot on the left temple, extending into the hair. After a prolonged examination the doctor informed his prospective patient that it was a well defined case of erysipelas. The man grasped his hat and hurriedly started for the door, saying "Ery *what?* Ery *hell!* It's a *hornet!*"

The regular meeting of the New York Institute of Stomatology was held November 9, at the office of Dr. J. Morgan Howe, 58 West Forty-Seventh St.

Dr. C. P. Parker presented a paper on his method of operating for the removal of part or all of the maxillary bones, when involved by disease—cancerous or necrotic—*with special reference to the after treatment for preserving the facial expression.*

Dr. G. Lenox Curtis and Dr. H. Lilienthal took prominent part in the discussion, but felt constrained to confine their remarks directly to the paper instead of widening them, as the temptation to do was very strong.

They so confined themselves because Dr. Parker himself was unavoidably absent on account of sudden illness in his family.

In the paper, which was brief, Dr. Parker said he much preferred *local* to *general* anesthesia, and secured this with beta eucaine two per cent solution as being safer than cocaine. By this method he secured the intelligent help of the patient when desired. He described his method of removing the maxilla, which did not differ radically from the usual procedure. He emphasized the use of the surgical engine. He described his success in retaining facial expression by means of a lead splint, such as is used as lining of tea boxes, so introduced as to hold the parts in their proper position, filling the hollow or interior with gauze.

Dr. Curtis spoke of Dr. Parker's having alluded to but *one* of the causes for resection and therefore he confined himself to that. He prefers the use of cocaine decidedly, claiming that the dentist's manipulative ability enabled him to operate for the removal of the maxilla *within the mouth* as readily as the surgeon could operate *through* the cheek.

Also—that surgeons are *not* justified in cutting *through* the face in maxillary operations, remarking that in Germany it was an honor to bear a facial scar, but in America—a misfortune.

Dr. Lilienthal, one of the surgeons of Mt. Sinai Hospital, followed Dr. Curtis. He spoke of this class of cases as being neglected by surgeons as a rule, and that too little attention was

given to the prevention of deformity. He spoke clearly and instructingly of sarcoma. Neoplastic work *demands* facial scarring in his opinion. Said he also did a great deal of work with local anesthesia. He praised highly the new local anesthetic "nirvanin," a soluble form of "orthoform."

He objected to the use of the surgical engine, and said that surgeons prefer to use the chisel because it makes a clean cut which will heal quicker than when the saw or bur has been used, claiming that those instruments *killed* a thin layer of bone (necrotic tissue) which must be exfoliated before union could occur. Referred to Dr. Parker's use of a lead splint as being "exceedingly clever."

The doctor urged the necessity of some device to separate the nose and mouth when both maxilla were removed. He complimented the dentist upon his ability to be a valuable coadjutor to the surgeon in such work. Dr. Fuller, of Brooklyn, spoke of seeing Dr. Parker operate.

Dr. Chas. O. Kimball explained the splint as well as he was able without models—a piece of sheet lead is cut in the shape of a half moon, so that support can be had from the horn of the moon, on or in any back teeth which may remain, the elasticity of the lip keeping it in its place. Its ductility enabling the operator to press and mold it into position so that the parts look very natural and so retaining them until the parts have healed. The lead used is about as thick as cardboard. In case there are no teeth to attach the horns to, recesses are made in the bone.

During this same meeting, Dr. S. Freeman, of New York, read a short paper on "The Use of Compressed Air in Operative Dentistry," and exhibited a new *antiseptic* mouth lamp. He uses this compressed air for nearly everything one would imagine. For introducing medicines into the gum—especially in pyorrhea—for drying cavities and root canals, etc., etc. Inci*dentally whitewashing* is now done by somewhat the same method, as recently some of your enterprising people in Chicago have *painted* an entire car by such a method. Probably Dr. Freeman or some other bright man will use compressed air to force a filling material into place ere long.

The discussion, which was participated in by Drs. Elliott, Schmidt, Meeker and others, took a wide range, entering into comparison of various forms of hydrogen dioxide, different kinds of electric lamps and hot air syringes. The little antiseptic lamp was

really clever, being a small electric *within* a *thin, long glass tube*, which latter could readily be removed, cleansed and made thoroughly antiseptic; the lamp itself and the handle never coming in contact with the mouth.

Recently (December 5) the Institute of Stomatology held its annual meeting, at which there was the usual election business and executive committee work only transacted. They reëlected the old board with few changes. The officers for the year are: President, E. A. Bogue; Vice President, E. A. Woodward; Recording Secretary, F. Milton Smith; Corresponding Secretary, Geo. A. Wilson; Treasurer, J. Adams Bishop; Editor, F. L. Bogue; Curator, J. G. Palmer. Executive Committee: S. E. Davenport, C. O. Kimball, J. Morgan Howe.

Yours sincerely,

THE BOROUGHS.

END OF THE CONTROVERSY IN WISCONSIN.

TO THE EDITOR.

Dear Sir:—Through the report of the law committee of the National Association of Dental Faculties the dental profession will be informed of the end of the legal controversy between the Faculties' Association and the State Board of Dental Examiners of Wisconsin.

The Chicago colleges were forced to adopt legal measures in order to maintain their rights and the rights of all the colleges of the association under the laws of Wisconsin, and these rights, after a long contention, have been secured.

In this public way the faculty of the Chicago College of Dental Surgery desires to thank the many graduates in Wisconsin for the loyal support they have given them during this contention.

We desire to assure all our graduates that the college will always protect their interests as practitioners; and while the members of the class of 1899 have suffered not a little annoyance in having been temporarily deprived of their rights in Wisconsin, justice, as it always does, has prevailed.

TRUMAN W. BROPHY,

Dean.

REVIEWS AND ABSTRACTS.

PART OF AN ADDRESS DELIVERED AT THE OPENING EXERCISES OF THE ILLINOIS SCHOOL OF DENTISTRY, WEDNESDAY EVENING, OCTOBER 4, 1899. BY DR. GARRETT NEWKIRK.

For many weeks the eye of America has been turned to the East, where a great vessel had her prow turned homeward; a warship with a history and a name to be remembered, bearing upon her decks a gallant crew, and one who, in a single day, made himself a place in naval annals second perhaps to none other.

It was not New York only that accorded him a welcome such as no returning American ever received before, except once, when General Grant returned from his trip around the world; it was the whole country that met the Admiral in spirit and by its representatives at the commercial gateway of the nation. How do we account for this enthusiasm? From what source does it spring? We may say that in part it represents American pride in the achievements of the American navy, and to this pride was added the sincere admiration of the American people for Admiral Dewey as a man. Up to the present time it would seem that he is entitled to all the respect and admiration which has been accorded to him.

It may seem strange to you that I should begin my remarks to-night by referring to a matter apparently foreign to that which immediately interests you, and to the purpose of this gathering. But I have observed that many of our prominent and wide-awake preachers are in the habit of seizing upon current events, those things which are immediately in the public eye, and using them for purpose of illustration, and it has seemed to me that there are numerous practical lessons which might be learned by a study of recent events and the characters of their leading actors. The Spanish-American war is full of matter for reflection. As a study of human nature merely, it affords a rich field. But for our purpose to night I think we shall find quite enough for our purpose in the life and character of Admiral Dewey.

We may hardly say that he awoke one morning to find himself famous. Rather it is that the world woke up one morning to learn that he had been awake before, and had made himself a name before dinner.

How was he able to do this? Was it by some sudden inspiration? Was it the effect of a mere impulse, or a result of careful preparation? Undoubtedly the latter.

True, there was a great opportunity, but opportunities are not often so well seized upon and improved. Perhaps there was no other man in the American navy, or any other navy, who could have done it so well. The reason why, we must seek in the special character of the man himself. It seems as if, without knowing it, he had been preparing a long time for this very occasion. For how long a time? He was about sixty-five years old, and I should say that the period of preparation had covered at least fifty years, perhaps more. Fifty years ago he had certainly learned some important lessons, and had entered upon the right path. He had ambition, and ambition of the right sort is commendable. Ambition to achieve success by true and honorable means is a necessary stimulus of effort.

I assume that the qualities of character and the course of conduct which made him successful in the naval profession would have made him successful in any other profession he might have chosen; that they would have made him eminent as a lawyer, architect or a physician, and would certainly have made him distinguished as a dentist.

He learned, first of all, the lesson of obedience—obedience to law and to proper authority. This began with the home. He recognized his duty to his parents. He entered the naval academy only with their consent, though they were reluctant to give it. He was an attendant on church services, and no scoffer at religion. At the academy he obeyed the rules of the institution. He recognized the force of law and man's obligation thereto.

No real success in life is ever achieved without this. No man is fitted to command other men or to take any leading position who has not himself learned and practiced obedience. The young man who enters any institution as a student, whether it be a military or naval academy or a dental college, is religiously bound upon his honor and by the rules of good character to accept and abide by the laws and regulations of the school. It bodes no good for his future if he is disobedient, disrespectful to his teachers and regardless of established rules. Such exhibitions show but a weakness of character which shall surely be disastrous to himself. Too often it appears that in a school there are several of this sort.

They make themselves infective centers of discontent and trouble. They are plague spots in any body that has the misfortune to have them as members. The school were better off without them, and yet the most distressing feature is the injury they inflict on themselves. Just so surely as they pursue such a course do they cut themselves off from all chances of success. What a student is in the class or the college he will almost certainly be afterward, and the bad qualities discovered there will crop out and be observed in the community wherein he may seek to establish himself.

Let me repeat, therefore, that the road to success begins with the principle of regard for and obedience to law.

Again, we have it on good authority that Dewey was a studious boy, and has always been since a studious man. He has been a thorough and a careful reader of standard works, especially those bearing on naval affairs. Through years of study he made himself an expert on matters of maritime and international law. He did not say, "I shall probably never have any use for this, and it is no use to bother with it." He was not afraid of making himself *too broad.* On whatever ship he went there went with him a good library of standard books. Now, mark the result. When the battle of Manila had been won a blockade of the harbor was established. Whenever a question arose under this régime, Commodore Dewey knew, and knew at once, what were the rights of the United States. There was no waiting, no vacillation. He was ready to say to a certain commander, "This is the law, and you must observe it." He was sure of his position when he sent the message, "If you want war, you can have it fifteen minutes." It was *knowledge, knowledge!* There is nothing like the assurance of definite knowledge, and there is no way of obtaining such knowledge aside from faithful study. It is the man who has studied for thirty, forty or fifty years who is qualified to make an epoch of history in a day. It is the man who improves his time quietly, perhaps unknown and unobserved, who is ready for the hour of responsibility when it arrives. Do I need to make any special application here? I think not. The law applies everywhere in life. There is no individual in high or low position who is exempt from its operation. Not all may become famous, but there are millions of common people in the world who are, in their own ways, exemplifying it.

Another quality of Admiral Dewey's character is hopeful

courage. Having acquainted himself fully with the conditions he has to meet, having laid his plans carefully, he moves swiftly with the confident expectation of success. He takes the chances and takes them boldly. And so, after the thing is done, we can see plainly enough that his way was the best and safest way. Beforehand we should not have deemed it possible. "All ready; forward; having now to act, let action be prompt" he seems to say. Out from Hongkong, across the sea, into the channel, out the lights, *sail on*, by high Corregidor; cannons boom. "*Sail on.*" Shall we wait for the light? "*Sail on.*" There are mines ahead; "*sail on.*" Not known the position of the enemy's fleet; *no matter;* "*sail on.*"

Here we have an example of the same splendid courage shown by Columbus on his first voyage. Each man had the inspiration of a great purpose, and each had behind him years of intelligent preparation for the task undertaken.

Is there not a grand lesson in this for us—for you, young men? The battle of life if successful must be fought on similar lines, with a similar spirit, and it may be displayed, too, in the commonest walks of life. I heard the other day of a family where some years ago the husband and father became blind. There were three small children to support and educate, and they were very poor. The wife and mother assumed the burden, and the only thing she could do was to go out washing. She did her work well, and found steady employment. She bought a house and paid for it, while keeping her family fed and clothed. A widowed sister, an invalid, next became her charge. She accepted this new burden cheerfully and is still going forward. One of her children has developed fine musical talent, and the mother has managed to secure good instruction for her. Is not this a fine piece of heroism in humble life? Not courage in shock of battle and roar of arms, for an hour or day, but *courage by the year*, sublimely steady.

There are heroes and heroines all about us, whom we pass every hour and know them not.

It may take quite as much courage for one of you young men to sail into the harbor of some town, not to fight, but to wait and endure the time; the strain may require more courage by far in the aggregate than to have sailed with Dewey and stood by the guns that May morning in Manila Bay, and the result will test the mettle of your make-up. If you wait and work with fortitude, and secure a place without compromise of character, well; otherwise write "*failure.*"

THE PRACTICE OF DENTAL MEDICINE. By G. F. EAMES, M. D., D. D. S. Published by the S. S. White Dental Mfg. Co., Philadelphia, Pa. 1899. Cloth. Price $2.75.

Illustrated with thirty-eight engravings and three colored plates. This is a work of 228 pages divided into forty-five chapters. It is well gotten up and is well printed. The author is a teacher in the Boston Dental College and is presumably an authority on this subject. From a very critical examination of the text we find the field well covered. In writing a work of this character an author must necessarily draw from the work of others, and this has been done with freedom and judgment. We think comparisons are generally odious, but the work of Barrett on "Oral Pathology and Practice" is more attractive as a guide for students than the one under consideration. It is so difficult to understand practice as it is understood in Massachusetts, especially for a westerner. Climate, soil and other environments are not the same, hence we might be inclined to differ from the author on practice of dental medicine. The pathology is quite up to date and may be considered quite in line with other standard works. The illustrations are good, the book is well printed and the index is quite complete.

In looking over the pages of this book we are most painfully impressed with what might be termed lack of enthusiasm or absence of positive statements regarding the use of remedies. To impress a student it is necessary to hammer things into him and we think in general that is the best method to employ. On the other hand, much is to be said in favor of this modest first venture and we hope it will be well studied in the lecture theater.

THE WISCONSIN CASE CLOSED.

TO THE EDITOR OF THE DENTAL REVIEW.

Dear Sir:—It is well known to the members of the dental profession, especially those interested in dental education, that in April, 1899, the Wisconsin State Board of Dental Examiners refused to register diplomas from the Chicago dental colleges and other schools as the law provides. The provision of the law is that the board shall at all times issue a license to any regular graduate of any reputable, legally incorporated dental college, without examination, upon the payment of the registration fee. After making inquiry of the secretary of the board as to the reason

why the diploma of his client was not registered, Attorney Quarles, who had been retained in the case, received the following reply:

MILWAUKEE, April 15, 1899.

HON. J. V. QUARLES, Milwaukee, Wis.

Dear Sir:—I am authorized to say from instructions received from a member of the committee on colleges of the National Association of Dental Examiners that if the college you represent accepts all the rules as laid down by the National Association of Dental Examiners, in regular form through that body, that this board will, upon the receipt of such knowledge, issue licenses to regular graduates of said college.

(Signed) W. H. CARSON,
Secretary.

After receiving the above letter, Dr. P. T. Diamond, a graduate of the Chicago College of Dental Surgery, brought mandamus proceedings to compel the board to accept his diploma. The board moved to quash the proceedings, which motion was denied by the court in a vigorous decision handed down by Judge Sutherland, of the Superior Court of Milwaukee County, Wis. Summing up the case, in regard to the standing of the college, the judge makes use of the following language:

"The relation in this case shows that among intelligent men, whether members of the dental profession or not, the Chicago College of Dental Surgery must be regarded as a reputable institution. * * Therefore, without difficulty the court reaches the conclusion that the motion to quash the mandamus proceedings must be denied."

The action of the board was based on the ground that those schools refused to subscribe to a rule passed by the National Association of Dental Examiners, regarding the preliminary educational qualification of students, the colleges giving as a reason, their unwillingness to accept the interference of the boards in a matter which was outside of their proper function.

The National Association of Dental Examiners, of which the Wisconsin Board was a member, at their meeting at Niagara Falls, in August, 1899, rescinded the rule which was the cause of the controversy, and passed a resolution adopting, in substance, the rule governing preliminary educational qualifications of students which was adopted in 1898 by the National Association of Dental Faculties, and it was hoped that henceforth the two national bodies would work in concert and harmony.

In adopting this resolution the National Association of Dental

Examiners recommended to the various State boards that all the schools belonging to the National Association of Dental Faculties be placed on the recognized list, and that the graduates of those schools be licensed, and that all litigation cease. In all States where difficulties had arisen regarding the registration of diplomas of graduates of schools belonging to the National Association of Dental Faculties, the trouble was at once terminated and licenses issued, except in the State of Wisconsin.

The representative from the Wisconsin board pledged himself at Niagara Falls to return home and do all in his power to terminate the litigation. The week following the National Association meeting, the Wisconsin board, with their attorney, met by appointment the representatives of the Chicago College of Dental Surgery and the plaintiff in the case against the board, with his attorney, and after a conference the representatives of the board informed the representatives of the college that the members of the board had voted *unanimously* to continue the litigation.

On August 13, 1899, the following letter was written by Senator J. V. Quarles, attorney for the complainant, to Dr. T. W. Brophy, Dean of the Chicago College of Dental Surgery :

QUARLES, SPENCE & QUARLES,
ATTORNEYS AND COUNSELORS,
THE SENTINEL BLDG. MILWAUKEE, WIS., August 13, 1899.

DR. T. W. BROPHY,
126 State St., Chicago, Ill.

Dear Doctor:—As you are aware, a meeting of the State Board of Dental Examiners took place yesterday in this city for the ostensible purpose of carrying out the recommendation of the National board so explicitly made at its meeting at Niagara Falls. Nothing could be more plain and explicit than the recommendations of such National association, which ought to be looked upon as a command by members thereof.

I have to report, however, that our State board have assumed to be wiser than the national organization and have positively declined to follow or respect the mandate of the central body. The State board refuses to recognize the diplomas of your college and all others similarly situated, and leaves no course open but to continue the litigation. We shall therefore, unless ordered to the contrary, embrace the first opportunity to crowd the case to a final hearing and allow the National board to deal with its recalcitrant members.

Very respectfully yours,
(Signed) QUARLES, SPENCE & QUARLES.

Preparations were then made for a vigorous prosecution of the case. The law committee of the National Association of

Dental Faculties, which was created at the Niagara Falls meeting in August, 1899, for the purpose of taking charge of this litigation, as well as any other litigation involving the association or any college holding membership therein, held a meeting in Chicago October 14, 1899, and after Drs. Barrett and Morgan of the committee held a conference with the members of the Wisconsin State Board, the latter agreed to license graduates of the Chicago colleges and all schools belonging to the National Association of Dental Faculties. November 6 the agreement was consummated. November 7 the following letter was received by the dean of the Chicago College of Dental Surgery:

QUARLES, SPENCE & QUARLES,
ATTORNEYS AND COUNSELORS,
THE SENTINEL BLDG. MILWAUKEE WIS., November 7, 1899.

DR. T. W. BROPHY,
Chicago, Ill.

Dear Doctor:—After great tribulation, regarding matters of detail, I am glad to report to you that the board has finally decided to conform with the provisions of the dental law of Wisconsin, abide by the ruling of the National Association of Dental Examiners and license Chicago graduates and all other graduates from schools holding membership in the National Association of Dental Faculties; thus admitting that, in their action in refusing to license these graduates from April 11 to November 6, 1899, they were in the wrong. Everything, consequently, in the Diamond mandamus case has been brought o a satisfactory conclusion.

The injustice the Wisconsin State Board of Dental Examiners has done your graduates, yourself and the many schools involved, cannot be easily forgotten, but our success in securing all we contended for is an assurance of the justice of our cause.

Dr. Diamond's license has been issued on our assurance that he would discontinue the case. The stipulation to withdraw the suit has been signed by both parties, the whole matter is closed up, and the litigation is a thing of the past.

Yours truly,
QUARLES, SPENCE & QUARLES.

A. O. HUNT,
W. C. BARRETT,
HENRY W. MORGAN,
Law Committee of the National Association of Dental Faculties.

November 22, 1899.

MEMORANDA

Dr. Thos. E. Weeks, of Minneapolis, Minn., was in Chicago in November.

Dr. Alfred Burne, of Sidney, New South Wales, will attend the Dental Congress at Paris.

Dr. Geo. H. Cushing, Secretary of the National Dental Association, resides at Los Angeles, Cal.

Dr. Geo. W. Schwartz, of Nebraska City, Neb., was in Chicago in November, visiting old friends.

Dr. C. S. Searles, of Dubuque, Iowa, will sail for the Mediterranean on December 16, for a long cruise.

When irrigating the antrum use one-half of one per cent silver nitrate in boiled water at 100° F. Irrigate thoroughly.

The Isaac Knapp Dental Coterie, of Fort Wayne, Ind., will hold its annual meeting for honorary members March 22, 1900.

At present writing it is impossible to state the exact cost of a trip to Europe next year, but we will give it in our January issue.

Dr. H. H. Mudd, of St. Louis, professor of surgery in the Missouri Dental College, is deceased. Dr. Mudd was one of the best known surgeons in the West.

If you are going to attend the dental congress at Paris, remember the date, August 8 to 14. It will be necessary to leave the United States by July 20 or 23 at latest.

Dr. F. B. Lawrence, of Eldorado, Kan., was a visitor in Chicago during November. Dr. Lawrence is a member of the Kansas Board of Dental Examiners.

The Kentucky State Dental Association will hold its annual meeting in Louisville, May 15, 16 and 17, 1900. It is expected that a large number will be present, as many attractions are promised.

And now we are to have a summer dental school in Chicago. Chicago needs only a few more colleges to enlist all practitioners as teachers. Three winter schools, one night school, one summer. What next?

THE ODONTOLOGICAL SOCIETY OF CHICAGO, 1899-1900.

Officers: President, A. W. Harlan; Vice President, L. L. Davis; Secretary and Treasurer, E. R. Carpenter; Curator, J. H. Woolley; Board of Censors, Chairman, A. W. Harlan, P. J. Kester, J. G. Reid.

Dr. Richard Grady, of Baltimore, has been appointed dentist to the naval academy, this appointment being the result of a competitive examination open to all dentists. There were more than thirty applicants from Baltimore and Washington, and one from California. The salary attached is $1,600. Dr. Grady is a graduate in medicine as well as in dentistry.

DELTA SIGMA DELTA FRATERNITY.

The semi-annual meeting of the Delta Sigma Delta Fraternity will be held in Philadelphia, December 29 and 30, immediately after the Technic Association adjourns, at the Continental Hotel. All members are requested to attend. A large and enthusiastic meeting is expected. Let this be a joyful occasion.

OHIO STATE DENTAL SOCIETY.

Officers-elect for 1899-1900: L. L. Barber, Toledo, President; H. F. Harvey, Cleveland, First Vice President; Otto Arnold, Columbus, Second Vice President; S. D. Ruggles, Portsmouth, Secretary; C. I. Keely, Hamilton, Treasurer.

The next annual meeting will be held in Columbus the first Tuesday in December, 1900.

LONDON, ENG., Nov. 7, 1899.

TO THE EDITOR DENTAL REVIEW.

Dear Sir: On page 848, curreet number, there is evidently a typographical error. Last two words should read *any* desire instead of "no desire."

Yours truly,

W. MITCHELL, D. D. S.

39 Upper Brook Street, Grosvenor Square, W.

NATIONAL SCHOOL OF DENTAL TECHNICS.

Meeting of the National School of Dental Technics will be held in Philadelphia, at the Continental Hotel, beginning at 10 A. M., Wednesday, December 27, and continuing three days. Every teacher in the profession should be present. A most excellent program will be presented, consisting of a lecture and demonstration by Prof. J. Liberty Todd, and papers by Drs. Faneuil D. Weisse, C. S. Case, D. A. Gritman, A. E. Webster, W. H. Whitslar, M. H. Cryer, H. J. Goslee, Otto Arnold, I. N. Broomell, G. V. Black, A. H. Thompson, James Truman and others. Sincerely yours,

GEO. H. WILSON, D. D. S.

LIQUOR THYMOLIS COMPOSITUS (P. B.).

℞	Benzoic acid	10 gm.
	Boric acid	20 "
	Borax	10 "
	Thymol	2 "
	Eucalyptol	gtt. x.
	Oil of wintergreen	" x.
	Oil of peppermint	" vi.
	Glycerin	100 c. c.
	Alcohol (90 per cent.)	300 c. c.
	Water	A sufficient quantity.

THE EDITOR OF THE DENTAL REVIEW.

Dear Sir:—In the building up of the college library, which now includes over 7,500 volumes, we desire to get contributions from members of the profession of both medical and dental journals, which they may have unbound,

and which in many cases are stored away and are of little use to the owner. If contributed to the library they will be bound and placed upon the shelves for the use of students in carrying on their work. We have already received several contributions, a large one having lately been given by Dr. John S. Marshall.

Yours very truly,

T. W. BROPHY,
Dean.

EXPLOSION AT A DENTAL INSTITUTE.—A YOUNG LADY INJURED.

An explosion of a somewhat serious nature occurred yesterday afternoon in a dental institute, occupied by Mr. H. W. Russell, at 46 George St. West. Mr. Russell himself was absent at the time. Mr. Victor R. Rattan, of 70 Stanley St., Hyde Park, and a young lady named Miss Ethel Dunn, residing at 113 King St., Newtown, were the only persons on the premises. They were engaged in mounting some teeth, and while heating the vulcanite an explosion took place, with the result that Miss Dunn had one of her hands badly lacerated. She was taken to the Sidney Hospital for treatment, and was found also to be suffering greatly from shock to the system. Mr. Rattan was more fortunate, but some damage was done in the room where the explosion took place.—*Sidney paper.*

TOOTHACHE.

℞ Hydrochlorate of cocaine..... gr. iss.
Menthol.
Carbolic acid (crys.)..... āā gr. xv.
Oil of cloves..... ♏ v.
Camphorated alcohol..... ..... ʒ ij.
M.

Or:

℞ Orthoform,
Carbolic acid..... ..... āā gr. xv.
Camphor.
Chloral hydrate..... āā ʒ i.

M. S. Pack cavity with cotton saturated with one of the above preparations. —*Dauchez.*

A BEAUTIFUL MOUTH.

The influence of the mouth and teeth on the personal beauty of a woman is known and freely admitted by all, and if a girl has a beautiful set of even, white, compact teeth she has the foundation of enough beauty for the average woman. Women of irregular features are yet irresistible, because they have enchanting mouths and teeth.

Sometimes it happens that despite the greatest care the gums soften and recede; there is usually an inherited cause. Taken in time the following wash is efficacious in hardening the gums:

Cachou.....z āā 32 grams
Myrrh..... ....32 grams
Palm of Peru..... 4 grams
Essence of cochlearia.....155 grams

Macerate for eight days, filter, use diluted with water to rinse the mouth and gums as often as required.—*From a Newspaper.*

[It will be news to many that the above will arrest receding gums.]

LETTER FROM DR. SMYSER.

TO THE EDITOR OF THE DENTAL REVIEW.

Dear Sir:—In reply to the advertisement published in the *Staatz Zeitung* of August 31, 1899, and republished in the November REVIEW (see page 959) I will say that I knew nothing of the existence of such an advertisement until I saw it in the office of the editor a few days before it appeared in the REVIEW. In trying to find the author of this ad., I am told that one Klinkoustrom telephoned it to the office of the paper from 263 E. Chicago Ave. If any one will take the trouble to look up that number he will find a small dwelling house with no one by that name living there. Upon further investigation I find Dr. Emil V. Klinkoustrom located at 493 North Robey St., who disclaims all knowledge of the "notice," he having spent the last eight months in Colorado. I cannot conceive of any one being so depraved as to perpetrate an act of this kind upon any one, but hope to be able to publish the name of this man in your next issue of the REVIEW. Cordially yours,

J. H. SMYSER.

ENGLISH DENTAL STUDENTS.

The number who have entered the dental profession through the schools during the past year is given by the London *Lancet* as follows:

Charing Cross Hospital School, London	26
Guy's Hospital, London	52
Middlesex Hospital, London	10
Dental Hospital of London	40
Mason College, Birmingham	12
University College, Bristol	2
University College, Cardiff	2
University College, Liverpool	52
Owen's College, Manchester	66
University of Durham, Newcastle	30
University College, Sheffield	1
Total	293

The proportion of college graduates in Great Britain is far below that of America. A college diploma is not essential to practice, and the existing schools teach little but theory, the practical part being acquired by a kind of apprenticeship to some practicing dentist, who imparts whatever of practical knowledge he may chose to give, or may not. What would American dentists think of a dental college that was practically without an operative infirmary, a crown and bridge department, or of properly equipped prosthetic laboratories? The English didactic teaching is excellent, and they give far better instruction in the extraction of teeth than we do, but in prophylaxis they seem to be woefully deficient.—*From a Correspondent.*

EXCESSIVE PERSPIRATION OF THE FEET.

R. Adler considers that all other methods of treatment have only historical interest since the advent of formaline and tannoform. He explains their action and advocates them warmly in *Deutsche Med. Woch.*, October 5, confirming the recommendations of formaline for this purpose by other writers noted in the *Journal*. He paints the sole with formaline once a day, and the spaces between the toes he powders with tannoform, if formaline cannot be supported. If both sole and toes are affected, he combines the two, painting also the under surface of the toes with the formaline. Care must be taken not to inhale the fumes of the formaline as it produces unpleasant sensations in the mouth, nose and the conjunctiva. If there are any signs of maceration the tannoform must be used alone until entirely healed, when the formaline should be applied.

NEURALGIA.

℞. Ext. hyoscyami..... 0. 12 cgm.
Ext. valerian ..... 0.20 "
Morphine, hydrochlor..... 0.01 "
Pulv. glycyrrhizæ..... q.s.

For one pill. Make xx. S. One morning and night, or not more than three in twenty-four hours.—BASTIÉ.

FETOR OF THE BREATH.

℞ Powdered coffee..... .... 45 parts.
Vegetable charcoal,
Powdered sugar.....each 15 "
Vanilla,
Mucilage of gum arabic..... a sufficiency.

M. Divide into pastilles of gr. xv. each. Five or six to be chewed daily.—*Journal de Médecine de Paris*, January.

The seventh annual meeting of The National School of Dental Technics will convene on Wednesday, December 27, 1899, at 10 o'clock A. M., at the Continental Hotel, Ninth and Chestnut Sts., Philadelphia, Pa. Sessions December 27, 28 and 29, 1899.

Wednesday, 27.—10:00 A. M.—Preliminary Organization—Payment of Dues, Report of Executive Officers, Executive Business. 10:30 A. M.—Report of Committees on Syllabi. "Operative Technic," Dr. T. E. Weeks; "Prosthetic Technic," Dr. H. J. Goslee. 11:30 A. M.—President's Address, Dr. N. S. Hoff; Discussion, Drs. E. C. Kirk and H. A. Smith. 2:00 P. M.—"Syllabus for Dental Curriculum," Dr. F. D. Weisse; Discussion, Drs. S. H. Guilford, M. W. Foster and G. V. I. Brown. 3:30 P. M.—"Dental Pedagogics," Dr. A. E. Webster; Discussion, Drs. C. N. Johnson, R. H. Hofheinz and L. G. Noel. 7:30 P. M.—Address—"Manual Training," Prof. J. Liberty Tadd. 8:30 P. M. —"The Use of the Lantern in Teaching," Dr. M. H. Cryer.

Thursday, 28.—10:00 A. M.—"Orthodontia Technic," Dr. C. S. Case; Discussion, Drs. C. D. Lukens, Grant Molyneaux and B. Holley Smith. 11:30 A. M. "Root Preparation Technic," Dr. H. J. Goslee; Discussion, Drs. I. N. Broomell, H. W. Morgan and H. P. Carlton. 2:00 P. M.—"The Use of the Blackboard in Technic," Dr. A. D. Gritman; Discussion, Drs. C. J. Essig and

H. W. Arthur. 3:30 P. M. "Operatory Methods," Dr. W. H. Whitslar; Discussion, Drs. W. E. Wilmott and D. M. Cattell. 5:00 P. M. Election of Officers.

Friday, 29. 10:00 A. M. "The Use of Text-Books in Class Work," Dr. Otto Arnold; Discussion, Drs. G. E. Hunt and H. B. Tileston. 11:00 A. M. Symposium of fifteen-minute papers on our Text-Books: "Operative Dentistry," Dr. G. V. Black; "Prosthetic Dentistry," Dr. I. N. Broomell; "Dental Pathology," Dr. A. H. Thompson; "Dental Therapeutics," Dr. J. Truman; "Oral Surgery," Dr. T. W. Brophy. 1:00 P. M.—Adjournment.

The Dental Digest is the self-appointed critic and censor of the colleges, but what it does not know about them would make a big book. In its November number may be found this sapient advice :

"The Wisconsin Dental College has organized a dental society of the students, which will meet monthly. We would commend the action to other colleges."

The editor of *Digest* should be told by somebody that there is not a dental college in the land which has enough of students to make up a respectable society, which has not organized from one to four students' societies, according to the number in attendance, and that some of these societies are twenty or more years old.

* * *

The *Digest* is as eminent for its scientific knowledge as it is for its acquaintance with college matters. Speaking in the November number of some alleged discoveries made among the ancient cliff dwellers of New Mexico, which habitations, by-the-way, have been many times explored, it says :

"The skulls show that the cliff dwellers had a long, intelligent face, strong chin, high brow, and a skull perfectly flat on the back. The teeth are prominent, but the incisors are missing, and in their place are full grinders, an indication that the cliff dwellers were vegetarians for many generations."

This is scientific information that will make every anthropologist smile broadly. That intelligence, which is indicated by facial muscles and tissues which may by their changes give expression, may be judged by the bones of the head, is something quite new. Also that there is or has been a race of people whose incisors have been substituted by full grinders, is a piece of information that will convulse the scientific world. Such a thing is a virgin discovery, for nothing of the kind was ever heard of before, in either man or the lower animals. But especially the deduction that this necessarily shows that the people were "vegetarians for many generations" indicates a general misinformation that will be fully appreciated by all ethnologists.

ALUMNI CLINIC CHICAGO COLLEGE OF DENTAL SURGERY.

The seventh annual clinic of the alumni association of the Chicago College of Dental Surgery will be held in the college building, Wednesday, January 17, 1900.

Clinics will be held during the day to be followed by a dinner in the evening.

The executive committee announces the following as the preliminary program:

No. 1. T. W. Brophy, Chicago. Surgical clinic.

No. 2. Chas. L. Hungerford, Kansas City, Mo. Illuminated rubber dam.

No. 3. Geo. D. Sitherwood, Bloomington, Ill. Aluminum plates suggestions (table clinic).

No. 4. S. R. Holden, Duluth, Minn. Filling of mesio-occlusal cavity in upper first bicuspid.

No. 5. W. V-B. Ames, Chicago. New process oxyphosphate of copper.

No. 6. E. K. Wedelstaedt, St. Paul, Minn. Dr. Wedelstaedt will fill a mesio-occlusal cavity in a molar or bicuspid with gold. He will demonstrate Dr. Black's method of preparing the cavity and filling the same, also the proper application of the rubber dam. A discussion of the clinic will follow the completion of the operation.

No. 7. E. J. Perry, Chicago. A demonstration in rubber work.

No. 8. A. D. Gritman, Buffalo, N. Y. The proper articulation of artificial teeth.

No. 9. C. P. Pruyn, Chicago. A method of root canal filling.

No. 10. H. J. Goslee, Chicago. Construction, carving and baking of porcelain crowns.

No. 11. H. L. Banzhaf, Manitowoc, Wis. Treatment and immediate root filling in cases of chronic abscess.

No. 12. C. E. Bentley, Chicago. Replantation for the cure of pyorrhea.

No. 13. J. E. Hinkins, Chicago. Contour filling, using moss fiber gold.

No. 14. A. C. Searl, Owatonna, Minn. Mesio-occlusal filling, demonstrating Dr. Black's method of cavity preparation, starting filling on unannealed cylinders and finishing with cohesive gold.

No. 15. J. E. Nyman, Chicago. Clinic in porcelain.

No. 16. O. A. Chappell, Elgin, Ill. Preparation and manipulation of noncohesive gold.

No. 17. W. H. Taggart, Chicago. Subject to be announced.

No. 18. Everett M. Cook, Toledo, Ohio. Tipping teeth with solid gold cusps.

No. 19. F. H. Robinson, Aurora, Ill. A method of taking upper impressions, also the use of napkins in filling.

No. 20. S. Finley Duncan, Joliet, Ill. The new Fouser matrix.

No. 21. Grafton Monroe, Springfield, Ill. Table clinic. Some uses of hydronaphthol.

No. 22. J. P. Carmichael, Milwaukee, Wis. Attachments for bridge, inlays and restoring badly worn or broken off teeth without the display of gold or other metal.

No. 23. Don M. Gallie, Chicago. Filling of mesio-occlusal cavity, using pellets and heavy foil.

No. 24. Walter H. Fox, Chicago. Subject to be announced.

No. 25. W. F. Fowler, Chicago. Something in porcelain.

No. 26. W. H. G. Logan, Chicago. Surgical operation.

No. 27. A. F. James, Oak Park, Ill. Exhibition of a case of immediate regulation.

No. 28. R. C. Brophy, Chicago. Subject to be announced.

No. 29. L. K. Stewart, Chicago. Waxing and finishing a vulcanite plate.

No. 30. Geo. W. Cook, Chicago. Surgical removal of deposits and after treatment.

No. 31. L. S. Tenney, Chicago. Operative technic exhibit.

No. 32. R. B. Tuller, Chicago. Contour filling in central incisor, using moss fiber gold.

No. 33. J. W. Slonaker, Chicago. Extraction under nitrous oxide.

No. 34. L. C. Borland, Chicago. Will exhibit dissections of special interest to dentists made by the class of 1901 on fifteen cadavers.

No. 35. G. W. Johnson, Chicago. Prosthetic technic exhibit.

No. 36. C. F. Bryant, Chicago. Subject to be announced.

No. 37. J. R. Watt, Chicago. Technic exhibit.

No. 38. F. W. Stephan, Chicago. A method of applying the matrix and the working of tin and gold in proximal cavities in bicuspids and molars.

W. T. Reeves,
President.

L. S. Tenney,
J. E. Nyman,
R. V. Cleveland. } *Executive Committee.*

Dr. B. H. Catching, of Atlanta, Ga., founder of the *Southern Dental Journal*, and editor of the *Compendium of Dentistry*, and later editor of the *American Dental Weekly*, died suddenly November 23, 1899.

NEW YORK ODONTOLOGICAL SOCIETY.

The thirty-second anniversary of the above society will take place at the Academy of Medicine, Tuesday, January 16, 1900, at 2 and 8 P. M.

At the afternoon session, commencing at 2 o'clock, Dr. Joseph Head, of Philadelphia, will give a clinic, inserting a porcelain inlay, using an entirely new cement. Immediately after the clinic Dr. Head will read a paper, subject, "Shadow Problems as Presented by Porcelain Inlays." The evening paper, by A. W. Harlan, M. D., D. D. S., of Chicago, subject, "A Review of Recent Literature on the Loose Tooth or Pyorrhea Problem."

Executive Committee: Dr. B. C. Nash, Dr. F. T. Van Woert, Dr. W. W. Walker, Chairman, 58 West Fiftieth St.

SUCCEEDS DR. MUDD. DR. FULLER CHOSEN DEAN OF MISSOURI DENTAL COLLEGE.

Members of the faculty of the Missouri Dental College met last night in the faculty rooms of the college for the purpose of electing a successor to the late Dr. Henry H. Mudd, former dean of the college. There was a full attendance of the membership present. Dr. A. H. Fuller was elected to the deanship. Dr. O. W. Bedell was elected secretary. The Missouri Dental College is a department of the Washington University.

CAN SUCH THINGS BE ?

We publish the letter below, taken from the *Dental Cosmos* for December because we have had it dinned into our ears so long by the universal censor of

the dental press that his is the only simon pure, unadulterated, self-reciprocating article of dental journalism on tap in this country. We think he is in error:

TO THE EDITOR OF THE *Dental Cosmos* :

Sir :—In the October number of the *Items of I terest* a change was made that may deceive the profession. It is in the report of my paper on high fusing porcelains, read at the last meeting of the New Jersey State Dental Society, and is to be found on page 724, tenth, eleventh and twelfth lines from the bottom, where I am quoted as saying, "The high fusing porcelains made for inlay work by the Consolidated Dental Manufacturing Company are in my opinion the best porcelains ever offered to the profession."

What I said was, "The high fusing porcelains made by Mr. Whitely are in my opinion the best porcelains ever offered to the profession." I did not mention the Consolidated company because I knew Mr. Whitely was no longer with them, and justly feared, as events have proved, that the material, lacking his personal supervision, might henceforth not be so good.

The editor of the *Items of Interest* excuses his action by explaining that he made the change because he did not wish to advertise an employee who had left the company he represents. Such advertising zeal ordinarily does not interest professional men, but when this zeal perverts the accuracy of scientific papers it becomes dangerous.

The porcelain inlay material now made by the Consolidated Dental Manufacturing Company is no longer indorsed by me since Mr. Whitely left the company.

I am compelled to ask space from the *Dental Cosmos*, as the editor of the *Items of Interest* is unwilling to rectify the error. JOSEPH HEAD.

PHILADELPHIA, October 25, 1899.

OBITUARY.

ACADEMY OF STOMATOLOGY, PHILADELPHIA, PA.

The committee, on resolutions upon the death of Dr. Bonwill, beg leave to submit the following :

WHEREAS : W. G. A. Bonwill, D. D. S., a member of the Academy of Stomatology has been removed by death, it becomes our mournful pleasure to make record of his worth, therefore be it

Resolved : As the sense of this society that in the death of Dr Bonwill the Academy has lost a distinguished member and the dental profession one of its best known followers.

As a man Dr. Bonwill was genial and affable, though often misunderstood. As a dentist he was skillful and conscientious. As an inventor he had no superior in the dental profession. As an enthusiastic worker in the field of dental advancement he had few equals.

Entering upon the study of dentistry at an early age and under pecuniary disadvantages, he worked his way to success and eminence by burning zeal and untiring industry. His temperament was such that he could not be idle and while others slept he was awake and working out problems which have made his name famous throughout the dental world.

As fellow comrades marching to the eternal world, we shall miss Dr. Bonwill from our ranks. Let us therefore loiter for a moment on the busy highway of life to hang one garland on his tombstone.

Resolved : That a copy of these resolutions be engrossed upon the records of the Academy and additional copies sent to his family and the dental journals.

EDWIN T. DARBY, Chairman,
JAMES TRUMAN,
I. N. BROOMELL. } *Committee.*

HARRY B. HICKMAN,
Secretary.

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